PB-215 948

WATER POLLUTION CONTROL RESEARCH AND TRAINING GRANTS: INDEX OF 1962-1964 RESEARCH GRANT PUBLICATIONS AND REPORTS

Federal Water Pollution Control Administration
Washington, D. C.

1964

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

PB 215 948

Water Pollution Control Research and Training Grants

Index of 1962-1964

RESEARCH GRANT PUBLICATIONS AND REPORTS

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U S Department of Commerce
Springfield VA 22151

FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

Washington, D. C. 20203

I

DISCRIMINATION PROHIBITED--Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving Federal financial assistance." Therefore, the Research and Training Grant Program of the Federal Water Pollution Control Administration, like every program or activity receiving financial assistance from the Department of Health, Education, and Welfare, must be operated in compliance with this law.

FOREWORD

The Federal Water Pollution Control Act authorizes the award of grants-in-aid for research projects relating to the causes, control, and prevention of water pollution.

Purposes

The water pollution control research grant program was initiated in 1962 with the award of 159 grants; the program increased in 1963 to 184 awards, and in 1964 to 203 awards. These awards support projects conducted principally by investigators in educational institutions throughout the Nation, in a few State agencies, and by individuals.

Research grants are awarded for the conduct of basic and applied research projects. The research studies extend over a wide variety of engineering fields, and include many biological, physical, and social science disciplines.

Accomplishments

The principal accomplishments resulting from research grant support are:

1. Information. New information developed by research is reported in the technical literature. The information provides tools to assist scientists and engineers in solving critical problems of water pollution control.

2. Training. New training involved in research expands the competence of professional personnel and student assistants. The training provides a means of meeting the expanding need for trained research manpower in the water pollution control field.

Publications

Investigators supported by research grants are expected to make the results of the research promptly available to the scientific public. Publication provides the most efficient means of communicating information about current research efforts.

The "Index of 1962-1964 Research Grant Publications and Reports" includes a total of 545 references to recent research supported by research grants. The value of this research information will be determined by the extent to which it is applied in the total research and development effort for controlling water pollution problems.

WATER POLLUTION CONTROL

RESEARCH GRANT PUBLICATIONS AND REPORTS

INDEX 1962 - 1964

CONTENTS

Foreword iii

Introduction vii

RESEARCH GRANT PUBLICATIONS AND REPORTS

Numerical List 1

Index to Project Directors 43

Index to Authors 45

Index to Research Subjects 50

Preceding page blank

INTRODUCTION

The "Index of Research Grant Publications and Reports" is a source document for the retrieval of references to the known literature which has resulted from research grants awarded under the Federal Water Pollution Control Act during 1962, 1963, and 1964.

Numerical List. Each research grant is identified by the grant number, and the project title, project director, and grantee institution or agency. The bibliographic references which follow are publications and reports produced under grant support. (Pages 1-42).

Index to Project Directors. An alphabetical list of project directors identifies the appropriate grant number for searching the numerical list to locate projects, publications, and reports when the project director is known. (Pages 43-44).

Index to Authors. An alphabetical list of authors identifies the appropriate grant number for searching the numerical list to locate publications, reports, and project titles when the author is known. (Pages 45-49).

Index to Research Subjects. A subject index of key terms identifies the appropriate grant number for searching the numerical list to locate research subjects. This index is keyed to research subjects whether they apply to the project title or to bibliographic references. (Pages 50-55).

The "Index" is designed to provide a useful record of the literature references credited to water pollution control research grant projects, and to facilitate communication between investigators. The 545 references to publications and reports have resulted from 143 projects, an average of 3.8 per grant.

It is recognized that the first "Index" cannot present a complete listing of all publications and reports derived from research grant projects. The "Index" is to be issued annually and made as comprehensive as possible. The assistance of all individuals who can provide additional references will be appreciated. Address correspondence to:

Research and Training Grant Program
Federal Water Pollution Control Administration
Washington, D. C. 20203

Preceding page blank

WATER POLLUTION CONTROL

RESEARCH GRANT PUBLICATIONS AND REPORTS

1962 - 1964

NUMERICAL LIST

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00002	TOXIC PROPERTIES OF THE BLUE-GREEN ALGAE	Dr. Floyd F. Davidson, Dept. of Biology, Baylor University, Waco, Texas
	Davidson, F. F. "Antibacterial Activity of Oscillatoria formosa bory Extract." Water and Sewage Works, Nov. 1961.	
	Davidson, F. F. "Antibacterial Activity of Extracts Obtained from Blue-Green Algae." Proc. 17th Ann. Purdue Industrial Waste Conf., May 3, 1962.	
WP-00003	TOXICITY OF PESTICIDES TO AQUATIC INVERTEBRATES	Dr. Arden R. Gaufin, Div. Biological Sciences, University of Utah, Salt Lake City, Utah
	Nebeker, A. V. and Gaufin, A. R. "Bioassays to Determine the Toxicity of Pesticides to the Amphipod Crustacean, Gammarus lacustris Sars." Proc. Utah Acad. Sci., Vol. 41, Part 1, May 1963.	
	Jensen, L. D. and Gaufin, A. R. "Effects of Ten Organic Insecticides on Two Species of Stonefly Naiads." Trans. Am. Fisheries Soc., Vol. 93, No. 1, Jan. 1964.	
	Jensen, L. D. and Gaufin, A. R. "Long-term Effects of Organic Insecticides on Two Species of Stonefly Naiads." Trans. Am. Fisheries Soc., Vol. 93, Nov. 4, Oct. 1964.	
	Gaufin, A. R. "The Effects of Insecticides on Aquatic Life." Proc. 13th Ann. Meeting Utah Mosquito Abatement Assn., Mar. 18-19, 1960.	
	Gaufin, A. R. "Bioassays to Determine the Toxicity of Pesticides to Aquatic Invertebrates." Proc. 15th Ann. Purdue Industrial Waste Conf., 1960.	
	Gaufin, A. R. "The Controversial Role of Insecticides." Proc. 14th Ann. Meeting Utah Mosquito Abatement Assn., 1961.	
	Gaufin, A. R., Jensen, L. and Nelson, T. "Bioassays to Determine Pesticide Toxicity to Aquatic Invertebrates." Water and Sewage Works, Sept. 1961.	
WP-00005	A STUDY OF MICROORGANISMS INDUCING TASTES AND ODORS IN WATER	Dr. R. P. Collins, Dept. of Botany, University of Connecticut, Storrs, Conn.
	Collins, R. P. and Bean, G. H. "Volatile Constituents Obtained from Chlamydomonas globosa 1. The Carbonyl Fraction." Phycologia, Vol. 3, Sept. 2, 1963.	

217-110 O - 66 - 2

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00005 (cont.)	A STUDY OF MICROORGANISMS INDUCING TASTES AND ODORS IN WATER	Dr. R. P. Collins, Dept. of Botany, University of Connecticut, Storrs, Conn.
	Gaines, H. D. and Collins, R. P. "Volatile Substances Produced by Streptomyces odorifer." Lloydia, 26: 247-253, 1963.	
	Collins, R. P. and Gaines, H. D. "The Production of Hydrogen Sulfide by Streptomyces odorifer." Appl. Microbiol., Vol. 12, No. 4, July 1964.	
	Collins, R. P. and Gaines, H. D. "Volatile Constituents Produced by the Actinomycete Streptomyces odorifer and the Alga Synura petersenii." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.	
WP-00006	MICROBIAL TRANSFORMATION OF ORGANIC SULFUR COMPOUNDS	Dr. R. L. Starkey, Dept. Agric. Microbiol. Rutgers University, New Brunswick, N. J.
	Lashen, E. and Starkey, R. L. "Microbial Dissimilation of Thiourea and Substituted Thioureas." Bacteriol. Proc. p. 5, (abstract) 1964.	
WP-00008	GAS TRANSFER TO AND FROM TURBULENT LIQUIDS	Dr. W. E. Dobbins, Dept. of Civil Eng. New York University, New York, N. Y.
	Dobbins, W. E. "Mechanism of Gas Absorption by Turbulent Liquids." Int'l. Conf. on Water Pollution Research, London, Sept. 1962.	
	Dobbins, W. E. "BOD and Oxygen Relationships in Streams." J. San. Eng. Div., Proc. ASCE, Vol. 90, No. SA3, June 1964.	
WP-00009	ENTERIC BACTERIA AND VIRUSES IN SEWAGE, WATER AND SHELLFISH	Dr. L. W. Slanetz, Dept. of Microbiol. University of N. Hampshire, Durham, N. Hamp.
	Slanetz, L. W. and Bartley, C. H. "Detection and Sanitary Significance of Fecal Streptococci in Water." Am. J. Pub. Health, Vol. 54, No. 4, April 1964.	
	Slanetz, L. W., Bartley, C. H. and Metcalf, T. G. "Correlation of Coliform and Fecal Streptococcal Indices with the Presence of Salmonellae and Enteric Viruses in Sea Water and Shellfish." Proc. 2nd Int'l. Conf. on Water Pollution Research, Tokyo, Aug. 1964.	
WP-00010	USE OF FISH TO DETECT ORGANIC INSECTICIDES IN WATER	Dr. C. M. Weiss, Dept. of Env. Sci. and Eng. Univ. of N. Carolina, Chapel Hill, N. C.
	Oglesby, R. T. and Weiss, C. M. "Some Biochemical Constitutents of Fish Tissue, with Special Reference to Brains." Trans. Am. Fisheries Soc., Vol. 92, April 1963.	
	Weiss, C. M. and Gakstatter, J. H. "Detection of Pesticides in Water by Biochemical Assay." J. Water Pollution Control Fed., Vol. 36, No. 2, Feb. 1964.	
	Weiss, C. M. "Organic Pesticides and Water Pollution." Public Works, Vol. 95, No. 12, Dec. 1964.	
	Weiss, C. M. "Use of Fish to Detect Organic Insecticides in Water." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.	

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION

WP-00012 A SHORT-TERM TOTAL OXYGEN DEMAND TEST — Dr. A. W. Busch, Dept. of Environmental Engr., William Marsh Rice Univ., Houston, Texas

Rao, T. S. and Busch, A. W. "BOD Progression in Soluble Substrates - V - TOD Acceleration with Log-Phase Seeding." Proc. 17th Ann. Purdue Industrial Waste Conf., May 1962.

Grady, L. Jr. and Busch, A. W. "BOD Progression in Soluble Substrates - VI - Cell Recovery Techniques in the T_bOD Test." Proc. 18th Ann. Purdue Industrial Waste Conf., May 1963.

Hiser, L. I. and Busch, A. W. "An 8-Hour Biological Oxygen Demand Test Using Mass Culture Aeration." J. Water Pollution Control Fed., Vol. 36, No. 4, April 1964.

Grady, L. Jr. and Busch, A. W. "Further Developments in the Total Biological Oxygen Demand Test." Proc. 14th Okla. Industrial Waste Conf., Nov. 1963.

WP-00013 OXYGENATION RATE OF FERROUS IRON IN NATURAL WATERS — Dr. Werner Stumm, Div. of Engr. and Applied Physics, Harvard Univ., Cambridge, Mass.

Stumm, W. and Lee, G. F. "Oxygenation of Ferrous Iron." Indust. and Eng. Chem., Vol. 53, Feb. 1961.

Stumm, W. and Galal-Gorchev, H. "The Reaction of Ferric Iron with Ortho-Phosphate." J. Inorganic Nuclear Chem., Vol. 25, 1963.

Morgan, J. J. and Stumm, W. "Colloid-Chemical Properties of Manganese Dioxide." J. Colloid Science, Vol. 19, No. 4, April 1964.

Stumm, W. "Stability Field Diagrams as Aids in Iron Chemistry Studies." JAWWA, Vol. 53, No. 2, Feb. 1961.

Morgan, J. J. and Stumm, W. "The Chemistry of Aqueous Manganese II and IV." Ph.D. Thesis, Harvard U., June 1964.

"Oxygenation of Manganese (II)." Proc. Am. Chem. Soc. Meet., New York, Sept. 1963.

"Physical Chemistry of Natural Waters in Relation to Water Quality." Proc. Conf. Environ. Measure, Cincinnati, 1964.

"The Role of Multivalent Metal Oxides in Limnological Transformations as Exemplified by Iron and Manganese." Proc. Int'l. Conf. on Water Pollution Research, Tokyo, Aug. 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00016	MICROBIOLOGY OF THE DILUTE ENRICHMENT	Dr. R. S. Wolfe, Dept. of Microbiol. Univ. of Illinois, Urbana, Illinois

Gaudy, E. and Wolfe, R. S. "Composition of an Extracellular Polysaccharide Produced by Sphaerotilus natans." Appl. Microbiol., Vol. 10, No. 3, May 1962.

Wolin, E. A., Wolin, M. J. and Wolfe, R. S. "Viologen Dye Inhibition of Methane Formation by Methano-bacillus omelianskii." Bact. Proc. p. 124, 1963.

Wolin, M. J., Wolin, E. A. and Wolfe, R. S. "ATP-Dependent Formation of Methane from Methyl Cobalamin by Extracts of Methane-bacillus omelianskii." Biochem. Biophys. Res. Commun., Vol. 12, No. 6, 1963.

Wolfe, R. S., Wolin, M. J. and Wolin, E. A. "Cell Free Formation of Methane." Fed. Proc. 22:355, 1963.

Wolin, E. A., Wolin, M. J. and Wolfe, R. S. "Formation of Methane by Bacterial Extracts." J. Biol. Chem., Vol. 238, No. 8, Aug. 1963.

"The Cobalamin Product of the Conversion of Methyl Cobalamin to CH_4 by Extracts of Methanobacillus omelianskii." Biochem. Biophys. Res. Commun., Vol. 15, 420-423, 1964.

Wolin, E. A., Wolin, M. J. and Wolfe, R. S. "Viologen Dye Inhibition of Methane Formation by Methanobacillus omelianskii." J. Bacteriol., Vol. 87, 993-998, 1964.

WP-00017	FUNDAMENTAL FACTORS IN TREATMENT OF IRON-BEARING WATERS	Dr. R. S. Engelbrecht, Dept. of Civil Eng. University of Illinois, Urbana, Illinois

Longley, J. M., Englebrecht, R. S. and Margrave, G. E. "Laboratory and Field Studies on the Treatment of Iron-Bearing Waters." JAWWA, Vol. 54, No. 6, June 1962.

"Measurement of Redox Potential and Determination of Ferrous Iron in Ground Waters." M.S. Thesis, U. of Illinois, Jan. 1962.

"A Study of the Rate of Oxidation of Iron in Aerated Ground Waters." M.S. Thesis, U. of Illinois, Aug. 1962.

"The Effect of Organics Extracted from Ground Water on the Rate of Oxidation of Iron." M.S. Thesis, U. of Illinois, Oct. 1962.

Robinson, L. R. "The Presence of Organic Matter and Its Effect on Iron Removal in Ground Water." Ph.D. Thesis, U. of Illinois, Oct. 1963.

WP-00018	FATE OF SYNTHETIC DETERGENTS IN SOIL AND GROUND WATER	Dr. Ben B. Ewing, Dept. of Civil Eng. University of Illinois, Urbana, Illinois

Suess, M. J. "Retardation of ABS in Different Aquifers." JAWWA, Vol. 56, No. 1, Jan. 1964.

Suess, M. J. "ABS Adsorption on Soils." J. Water Pollution Control Fed., Vol. 36, No. 11, Nov. 1964.

Suess, M. J. "Surface Area Measurements and Adsorption of Soils." J. Irr. and Drain. Div., Proc. ASCE, Vol. 90, No. IR1, Mar. 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00019	SYSTEMS ANALYSIS OF MUNICIPAL SEWAGE TREATMENT	Dr. Abraham Charnes, Dept. of Eng. Sciences, Northwestern Univ., Evanston, Illinois

Deininger, R. A. "Water Quality Management: The Planning of Economically Optimal Pollution Control Systems." Ph.D. Thesis, Northwestern U., June 1964.

Charnes, A. and Gemmell, R. E. "A Method of Solution of Some Non-Linear Problems in Abatement of Stream Pollution." Syst. Res. Group, Memo. No. 103, Northwestern U., May 1964.

Warsan, S., Eisen, R., Quon, J. and Charnes, A. "Computer Simulation of a Refuse Collection System." Syst. Res. Group, Memo. No. 101, Northwestern U., April 1964.

Lynn, W. R., Logan, J. A. and Charnes, A. "Systems Analysis for Planning Wastewater Treatment Plants." J. Water Pollution Control Fed., Vol. 34, No. 6, June 1962.

"Location-Allocation Problems in the ℓ1-Metric." Syst. Res. Group, Memo. 105, Northwestern U., May 1964.

Logan, J. A., Hatfield, W. D., Russell, G. S. and Lynn, W. R. "An Analysis of the Economics of Wastewater Treatment." J. Water Pollution Control Fed., Vol. 34, No. 9, Sept. 1962.

WP-00020	IMPROVEMENT OF OXIDATION POND EFFLUENTS BY ORGANISMS	Dr. John W. DeWitt, Div. of Nat. Resources, Humboldt State College, Arcata, California

Hazel, C. R. "Chlorophyll and Non-Astacin Pigment Concentrations, and Photosynthetic Oxygen Production in a Sewage Oxidation Pond." M.S. Thesis, Humboldt State Coll., 1963.

WP-00023	ENVIRONMENTAL RELATIONSHIPS OF BENTHOS IN SALT PONDS	Dr. C. J. Fish, Graduate School of Oceanogr. Univ. of Rhode Island, Kingston, Rhode Island

Lackey, J. B. "Bottom Sampling and Environmental Niches." Limnol. and Ocean., Vol. 6:271, 1961.

Jeffries, H. P. "Environmental Characteristics of Raritan Bay, a Polluted Estuary." Limnol. and Ocean., Vol. 7, No. 1, Jan. 1962.

Jeffries, H. P. "Comparative Studies on Estuarine Zooplankton." Limnol. and Ocean., Vol. 9, No. 3, July 1964.

Jeffries, H. P. "Indices of Ecological Condition in Marine Organisms - a Trial Study." Proc. Symp. on Exp. Marine Ecol., U. of Rhode Island, 1964.

Conover, J. T. and Sieburth, J. McN. "Effect of Sargassum Distribution on its Epibiota and Antibacterial Activity." Botanica Marina, Vol. 6, Fasc. 1/2, Jan. 1964.

Jeffries, H. P. "Succession of Two Ascartia Species in Estuaries." Limnol. and Ocean., Vol. 7, July 1962.

Jeffries, H. P. "Salinity Space Distribution of the Estuarine Copepod Eurytemora." Int'l. Rev. Hydrobiol., Vol. 47:291, 1962.

Jeffries, H. P. "Environmental Relationships of Benthic Biota in Coastal Ponds." Proc. 1st Nat. Coastal & Shallow Water Res. Conf., U. of Rhode Island, 1962.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00023 (cont.)	ENVIRONMENTAL RELATIONSHIPS OF BENTHOS IN SALT PONDS	Dr. C. J. Fish, Graduate School of Oceanogr. Univ. of Rhode Island, Kingston, Rhode Island

Dillon, W. P. "Flotation Technique for Separating Fecal Pellets and Small Marine Organisms from Sand." Limnol. and Ocean., Vol. 9:601-602, 1964.

Sieburth, J. McN. "Role of Algae in Controlling Bacterial Population in Estuarine Waters." Comm. Int'l. pour L'Explor. Sci. de la Mer Mediterranee, April 1964.

WP-00024	INTERNAL HYDRAULIC WORK IN FLOCCULATION	Dr. Gordon M. Fair, Dept. of Sanitary Eng. Harvard University, Cambridge, Mass.

Fair, G. M. and Gemmell, R. S. "A Mathematical Model of Coagulation." J. Colloid Science, Vol. 19, 360-372, 1964.

WP-00026	NUTRITIVE AND DISEASE TRANSMITTING POTENTIAL OF SEWAGE GROWN ALGAE	Dr. William J. Oswald, Inst. of Eng. Research, Univ. of Calif. Berkeley, Calif.

Golueke, C. G. and Oswald, W. J. "Mass Culture of Porphyridium cruentum." Appl. Microbiol., Vol. 10, No. 2, Mar. 1962.

Oswald, W. J., Golueke, C. G., Cooper, R. C., Meyers, J. H., Hintz, H. and Gee, H. K. "Nutritional and Disease Transmitting Potential of Sewage-Grown Algae." U. of Cal., San. Eng. Res. Lab., SERL Report No. 64-6.

Golueke, C. G. and Oswald, W. J. "Power From Solar Energy--Via Algae-Produced Methane." Solar Energy, Vol. 7, No. 3, July 1963.

Oswald, W. J., Golueke, C. G., Cooper, R. C., Gee, H. K. and Bronson, J. C. "Water Reclamation, Algal Production, and Methane Fermentation." Int'l. Jour. of Air and Water Pollution, Vol. 7, Nos. 6 and 7, Aug. 1963.

Oswald, W. J. "Rational Design of Waste Ponds." Proc. Central Public Health Eng. Research Inst., Nagpur (India), Symposium, Oct. 29-30, 1963.

Oswald, W. J. "High-Rate Pond in Waste Disposal." Developments in Industrial Microbiology, Vol. 4, 1963.

Oswald, W. J. "Waste Treatment." Developments in Industrial Microbiology, Vol. 4, 1963.

"Production of Chlorella and Its Bearing on Waste Treatment." Proc. 19th Congr. Int'l. Un. Pure Appl. Chem., July 1963.

Oswald, W. J. and Golueke, C. G. "Solar Power Via a Botanical Process." Mech. Eng., Feb. 1964.

Golueke, C. G., Oswald, W. J. and Gee, H. K. "Harvesting and Processing Sewage-Grown Planktonic Algae." U. of Cal., San. Eng. Res. Lab., SERL Report No. 64-8, Sept. 1964.

Golueke, C. G. and Oswald, W. J. "Use of Ponds in Rural Sanitation." Proc. of the California Assn. of Sanitarians, 13th Ann. State-Wide Educat. Symp., April 16-17, 1964.

Oswald, W. J. "Advances in Stabilization Pond Design." Proc. 3rd Ann. Sanitary and Water Resources Eng. Conf., Vanderbilt U., May 25-26, 1964, Nashville, Tenn.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00026 (cont.)	NUTRITIVE AND DISEASE TRANSMITTING POTENTIAL OF SEWAGE GROWN ALGAE	Dr. William J. Oswald, Inst. of Eng. Research, Univ. of Calif. Berkeley, Calif.

Oswald, W. J. "Aerobic and Anaerobic Ponds, (in) Industries Idea Clinic." J. Water Pollution Control Fed., Vol. 36, No. 8, Aug. 1964.

Oswald, W. J. "The Coming Industry of Controlled Photosynthesis." Am. J. Pub. Health, Vol. 52, No. 2, Feb. 1962.

WP-00027	MULTIPURPOSE MANAGEMENT TECHNIQUES FOR REUSABLE WATER	Dr. Don M. Rees, Div. of Biological Sciences, Univ. of Utah, Salt Lake City, Utah

Andersen, D. M. and Rees, D. M. "A Report of the First Year Study on Development of Techniques for Multi-purpose Management of Reusable Water." Proc. 16th Ann. Meeting Utah Mosquito Abatement Assn., 1963.

Andersen, D. M., Rees, D. M. and Arnold, F. D. "Recent Accomplishments in the Cooperative Multi-purpose Water Management Program in Utah." Proc. 17th Ann. Meeting Utah Mosquito Abatement Assn., 1964.

Arnold, F. D. "The Wheeler Machinery Company Land Development Project and Multi-purpose Water Management Program." Proc. 16th Ann. Meeting Utah Mosquito Abatement Assn., 1963.

Rees, D. M. "The Development of Techniques for Multi-purpose Management of Reusable Water Before It Enters the Great Salt Lake." Proc. 15th Ann. Meeting Utah Mosquito Abatement Assn., 1962.

Rees, D. M. "Cooperative Research Program in Utah Directed Towards Mosquito Reduction on Wildlife Areas." Proc. Conf. for Coord. Program on Wildlife Managemt. and Mosq. Suppr., 1962.

Rees, D. M. "Progress in the Management of Reusable Water in Utah." Proc. 16th Ann. Meeting Utah Mosquito Abatement Assn., 1963.

Rees, D. M. "Report on Utah Mosquito Control - Fish and Wildlife Management Coordination Committee." Proc. 32nd Ann. Conf. Calif. Mosquito Control Assn., Inc. 1964.

Rees, D. M., Arnold, F. D. and Andersen, D. M. "Development of Techniques for Multi-purpose Management of Reusable Water Before It Enters the Great Salt Lake." 1962 Ann. Report and Summary, No. 1, 1963.

Rees, D. M., Arnold, F. D., Andersen, D. M. and Collett, G. C. "Development of Techniques for Multi-purpose Management of Reusable Water Before It Enters the Great Salt Lake." Ann. Report No. 2, 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00029	MULTIPURPOSE MODIFICATION OF PLAYA SINKS	Dr. David M. Cowgill, City Health Dept. P. O. Box 998, Lubbock, Texas
	"Multipurpose Modification of Playa Sinks." First Ann. Progress Report, 1962.	
	"Multipurpose Modification of Playa Sinks." Second Ann. Progress Report, 1963.	
	"Multipurpose Modification of Playa Sinks." Third Ann. Progress Report, 1964.	
	Lyle, W. "Preliminary Study of Infiltration from a Playa Lake in Lubbock County, Texas"--Prepared for "The Multipurpose Modification of Playa Lakes." 1964.	
	Redell, D. L. "Modification of Playa Lakes." The Cross Section 11(2):3. (A Monthly Publication of the High Plains Underground Water Conservation District No. 1) 1964.	
	Cowgill, D. M. "1964 Multipurpose Modification of Playa Lakes." Bull. of Pan American Sanitary Bureau.	
WP-00032	DESIGN CRITERIA FOR LIVESTOCK WASTE LAGOONS	Dr. E. A. Jeffrey, Dept. of Sanitary Eng. Univ. of Missouri, Columbia, Missouri
	Jeffrey, E. A., Blackman, W. C. Jr. and Ricketts, R. L. "Aerobic and Anaerobic Digestion Characteristics of Livestock Wastes." Eng. Series Bull. No. 57, Eng. Exper. Station, U. of Missour, Columbia, Mo., 1963.	
	Jeffrey, E. A., Blackman, W. C. Jr. and Ricketts, R. L. "What it Takes to Make a Lagoon Work." Pres. at 1963 Winter Meeting Amer. Soc. of Agric. Engineers, Chicago, Ill., Dec. 1963.	
WP-00039	DETERMINATION OF TRANSITION ZONES IN SETTLING BASINS	C. H. Bonney, School of Engineering, Vanderbilt Univ., Nashville, Tennessee
	Bonney, C. H., Webb, M. R. and Rowan, W. H. "Tank Flow Line Determination." Water and Sewage Works, Feb. 1963.	
WP-00043	MODES OF CORROSION INHIBITION IN NATURAL WATERS	Dr. Werner Stumm, Div. of Engr. and Applied Physics, Harvard Univ., Cambridge, Mass.
	Schneider, C. R. and Stumm, W. "Evaluation of Corrosion in Distribution Systems." JAWWA, Vol. 56, No. 5, May 1964.	
	Weber, W. J. Jr. and Stumm, W. "Mechanism of Hydrogen Ion Buffering in Natural Waters." JAWWA, Vol. 55, No. 12, Dec. 1963.	
WP-00044	A CONTINUOUS MULTIPARAMETER WATER QUALITY MONITOR	Dr. M. K. Testerman, Dept. of Electronics and Instrumentation, Univ. of Ark., Little Rock
	Testerman, M. K., Borchers, C. E. and Raible, R. W. "A Self-Contained Water Quality Monitor." Proc. Am. Chem. Soc., Div. Water and Waste Chem., Phila., April 1964.	
	Borchers, C. E., Raible, R. W., Testerman, M. K. and Romine, R. W. "Electrochemical Transducers for Water Quality." Analysis Instrument., 1964. Plenum Press, N. Y.	

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00047	FACTORS INFLUENCING FREE-LIVING NEMATODES IN WATER	Dr. R. S. Engelbrecht, Dept. of Civil Eng. Univ. of Illinois, Urbana, Illinois

Chaudhuri, N., Siddiqi, R. and Engelbrecht, R. S. "Source and Persistence of Nematodes in Surface Waters." JAWWA, Vol. 56, No. 1, Jan. 1964.

Chaudhuri, N. "Occurrence and Controlled Environmental Studies of Nematodes in Natural and Waste Waters." Ph.D. Thesis, Civil Eng. Studies, San. Eng. Series No. 20, U. of Illinois, Feb. 1964.

"Benthic Sampling, Analysis, and Ecological Studies of Nematodes." M.S. Thesis, Civil Eng. Studies, San. Eng. Series No. 22, U. of Illinois, May 1964.

WP-00051	HYDROLOGIC PROPERTIES OF FOREST HUMUS TYPES	Dr. Stanley P. Gessel, Dept. of Forestry, Univ. of Washington, Seattle, Washington

Cole, D. W., Gessel, S. P. and Held, E. E. "Tension Lysimeter Studies of Ion and Moisture Movement." Soil Sci. Soc. Am. Proc., Vol. 25:321, July-Aug. 1961.

Balci, A. N. "Physical, Chemical and Hydrological Properties of Certain Western Washington Forest Floor Types." Ph.D. Thesis, U. of Washington, 1964.

WP-00057	FLUORESCENT TRACING OF SEDIMENTS IN COASTAL AREAS	Dr. Per Bruun, Lab. of Coastal Engineering, Univ. of Florida, Gainesville, Florida

Bruun, P. "Longshore Currents and Longshore Troughs." J. Geophys. Research, Vol. 68, No. 4, Feb. 15, 1963.

Bruun, P. "Tracing of Material Movement of Seashores." Shore and Beach, April 1962.

Bruun, P. "Quantitative Tracing of Littoral Drift." Proc. Fed. Interagency Sedimentation Conf., Jackson, Miss., Feb. 1963.

Bruun, P. "Longshore Wave Current Theories." Am. Geophys. Union, Vol. 68, No. 3, 1963.

Bruun, P. "Coastal Development and Coastal Protection." Bulletin Program U. of Florida, Vol. 17, No. 8, 1963.

Bruun, P. and Battjes, J. A. "Tidal Inlets and Littoral Drift." Proc. IAHR Congr. London, 1963.

Bruun, P. "Emergency Measures to Combat Beach Erosion." Leaflet No. 158, Eng. Indust. Exp. Station, U. of Florida, June 1963.

Bruun, P. "Longshore Currents and Longshore Troughs." Proc. 8th Conf. Coastal Eng. Council Wave Res., Berkeley, 1963.

Bruun, P. "Quantitative Tracing of Littoral Drift." Proc. 9th Int'l. Conf. on Coastal Eng., Lisbon, 1964.

Bruun, P. "World's Northernmost Artificial Beach." Shore and Beach, 1964.

217-110 O - 66 - 3

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00067	THE RESISTANCE OF FISH TO REFINERY EFFLUENTS	Dr. William H. Irwin, Dept. of Zoology, Oklahoma State Univ., Stillwater, Oklahoma

Ward, C. M. and Irwin, W. H. "The Relative Resistance of Thirteen Species of Fishes to Petroleum Refinery Effluent." Proc. 15th Ann. Conf., S. E. Assn. Game and Fish Comms., 1961.

Whitworth, W. R. and Irwin, W. H. "The Minimum Oxygen Requirements of Five Species of Fish under Quiescent Conditions." Proc. 15th Ann. Conf., S. E. Assn. Game and Fish Comms., 1961.

Douglas, N. H. and Irwin, W. H. "Evaluation and Relative Resistance of Sixteen Species of Fish as Test Animals in Toxicity Bioassay of Petroleum Refinery Effluents." Proc. 17th Ann. Purdue Industrial Waste Conf., May 1-3, 1962.

Whitworth, W. R. and Irwin, W. H. "Oxygen Requirements of Fish in Relation to Exercise." Proc. 15th Ann. Conf., S. E. Assn. Game and Fish Comms., 1961.

Jones, T. C. and Irwin, W. H. "Temperature Preferences by Two Species of Fish and the Influence of Temperature on Fish Distribution." Proc. 16th Ann. Conf., S. E. Assn. Game and Fish Comms., 1962.

Gould, W. R. and Irwin, W. H. "The Suitabilities and Relative Resistences of Twelve Species of Fish as Bioassay Animals for Oil Refinery Effluents." Proc. 16th Ann. Conf., S. E. Assn. Game and Fish Comms., 1962.

Bunting, Dewey L. II, and Irwin, W. H. "The Relative Resistances of Seventeen Species of Fish to Petroleum Refinery Effluents and a Comparison of Some Possible Methods of Ranking Resistances." Proc. 17th Ann. Conf., S. E. Assn. Game and Fish Comms., 1963.

WP-00070	MOVEMENT OF WATER FROM WASTE RECHARGE INSTALLATIONS	Dr. Don Kirkham, Dept. of Agronomy, Iowa State Univ. Ames, Iowa

Kirkham, D. "Exact Theory of the Shape of the Free Surface About a Well in A Semi-confined Aquifer." J. Geophys. Research, Vol. 69, No. 12, June 15, 1964.

Kirkham, D. "Physical Artifices and Formulas for Approximating Water Table Fall in Tile-Drained Land." Soil Sci. Soc. Amer. Proc. Vol.28:585-590, Sept.-Oct. 1964.

Kirkham, D. and Powers, W. L. "An Exact Theory of Seepage of Steady Rainfall Into Tile and Ditch Drained Land of Finite Depth." Trans. 9th Int'l. Congr. Soil Sci., Bucharest, Aug. 29--Sept. 10, 1964.

WP-00071	MECHANICS OF AERATION AND DISPERSION IN RIVER POLLUTION	Dr. Donald R. F. Harleman, Dept. of Civil Eng. Mass. Inst. of Tech., Cambridge, Mass.

Harleman, D. R. F. "The Significance of Longitudinal Dispersion in the Analysis of Pollution in Estuaries." 2nd Int'l. Conf. on Water Pollution Res., Sect. 1, No. 13, Tokyo, Aug. 1964.

Harleman, D. R. F. and Holley, E. R. Jr. Discussion of paper by Krenkel and Orlob on "Turbulent Diffusion and the Reaeration Coefficient." J. San. Eng. Div., Proc. ASCE, Vol. 88, SA6, Nov. 1962.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION

WP-00075 RESPONSE OF ACTIVATED SLUDGE TO ORGANIC SHOCK LOADS — Dr. A. F. Gaudy, Dept. of Civil Eng. Oklahoma State Univ. Stillwater, Oklahoma

Gaudy, A. F. Jr., Bhatla, M. N. and Abu-Niaaj, F. "Studies on the Occurrence of the Plateau in BOD Exertion." Proc. 18th Ann. Purdue Industrial Waste Conf., May 1963.

Gaudy, A. F. Jr., Gaudy, E. T. and Komolrit, K. "Multicomponent Substrate Utilization in Natural Populations and a Pure Culture of Escherichia coli." Appl. Microbiol., Vol. 11, 1963.

Gaudy, A. F. Jr., Abu-Niaaj, F. and Gaudy, E. T. "A Statistical Study of the Spot Plate Technique for Viable Cell Counts." Appl. Microbiol., Vol. 11, 1963.

Gaudy, A. F. Jr., Komolrit, K. and Bhatla, M. N. "Sequential Substrate Removal in Heterogeneous Populations." J. Water Pollution Control Fed., Vol. 35, No. 7, July 1963.

Gaudy, A. F. Jr. and Ramanathan, M. "A Colorimetric Method for Determining Chemical Oxygen Demand." Proc. Tex. WPCA Industrial Waste Conf., June 1963.

Komolrit, K. and Gaudy, A. F. Jr. "Biochemical Response of Continuous Flow Activated Sludge Processes to Qualitative Shock Loadings." 37th Ann. Conf. Water Pollution Control Fed., Bal Harbour, Fla. Sept. 1964.

Komolrit, K. and Gaudy, A. F. Jr. "Substrate Interaction During Shock Loadings to Biological Treatment Processes." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

Gaudy, A. F. Jr. and Komolrit, K. "Sequential Substrate Removal in Response to Qualitative Shock Loading of Activated Sludge Systems." Appl. Microbiol., Vol. 12, 1964.

Gaudy, A. F., Komolrit, K., Gaudy, E. T. and Bhatla, M. N. "Multicomponent Substrate Removal by Activated Sludge and by Pure Culture Systems." Proc. 63rd Ann. Meet. Am. Soc. Microbiol., Cleveland, May 1963.

Gaudy, A. F. Jr. "Biochemical Response of Mixed Mass Culture to Changes in the Environment." Res. Seminar, Rice U., Houston, Tex., Feb. 1963.

WP-00077 EFFECT OF ORGANIC SUBSTANCES FROM SEA ON BACTERIA — Dr. G. E. Jones, Dept. of Biology, Univ. of California, La Jolla, California

Jones, G. E. "Suppression of Bacterial Growth by Sea Water." Symp. on Marine Microbiol., 1963. C. C. Thomas Pub. House, Springfield, Ill.

Jones, G. E. "Effect of Chelating Agents on the Growth of Escherichia coli in Seawater." J. Bacteriol., Vol. 87, No. 3, Mar. 1964.

Jones, G. E. "Effect of Chelating and Autoclaving of Sea Water on the Growth of Escherichia coli." Bacteriol. Proc., 1962.

Jones, G. E. "The Importance of Amino Acids to the Development of Marine Bacteria." VIII Int'l. Congress for Microbiol., Montreal, pp. 49, 1962.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00078	MICROBIOLOGY OF POLLUTED AND UNPOLLUTED WATERS	Dr. H. Heukelekian, Dept. of Env. Science, Rutgers Univ. New Brunswick, New Jersey
	Heukelekian, H. and Dondero, N. C. "Principles and Applications in Aquatic Microbiology." Rudolfs Res. Conf. Proc., 1963. John Wiley & Sons, Inc., 1964.	
WP-00079	COMPONENTS OF KRAFT MILL WASTES AND THEIR TOXICITIES	Dr. Elliot N. Marvell, Dept. of Chemistry, Oregon State Univ. Corvallis, Oregon
	Marvell, E. N. and Wiman, R. "4-(p-Tolyl)-1-pentanol in Douglas Fir Pulping Products." J. Organic Chem., Vol. 28, (1542) June 1963.	
WP-00080	THE ROLE OF ANIMAL FECAL FLORA IN STREAM POLLUTION	Dr. S. M. Morrison, Dept. of Pathol. and Microbiol. Colorado State U., Fort Collins
	Lofton, C. C., Morrison, S. M. and Leiby, P. D. "The Enterobacteriaceae of Some Colorado Small Mammals and Birds, and Their Possible Role in Gastroenteritis in Man and Domestic Animals." Zoonoses Research, Vol. 1, No. 15, Dec. 31, 1962.	
WP-00082	PEARL RIVER FISHES-INDEX PRE-POLLUTION SURVEYS	Dr. R. D. Suttkus, Dept. of Zoology, Tulane Univ. New Orleans, Louisiana
	Suttkus, R. D. "Etheostoma moorei, a New Darter of the Subgenus Nothonotus from the White River System, Arkansas." Copeia, Vol. 1: 130-139, 1964.	
	Fingerman, S. W. and Suttkus, R. D. "Comparison of Hybognathus hayi Jordan and Hybognathus nuchalis Agassiz." Copeia, Vol. 4:462, 1963.	
	Suttkus, R. D. and Sundararaj, B. I. "Fecundity and Reproduction in Large Scale Menhaden." Tulane Stud. Zool., Vol. 8:177, 1961.	
	Sundararaj, B. I. and Suttkus, R. D. "Fecundity of Spotted Seatrout, Cynoscion nebulosus." Trans. Am. Fisheries Soc., Vol. 91, No. 1, Jan. 1962.	
	Yerger, R. W. and Suttkus, R. D. "Records of Freshwater Fishes in Florida." Tulane Stud. Zool., Vol. 9:323, 1962.	
WP-00083	AMINO ACID FORMATION IN ANAEROBIC SLUDGE DIGESTION	Dr. Joseph F. Malina, Dept. of Civil Eng. Univ. of Texas, Austin, Texas
	Woods, C. E. and Malina, J. F. Jr. "Glycine Uptake by Anaerobic Wastewater Sludge." Proc. 19th Ann. Purdue Industrial Waste Conf., May 5-7, 1964.	
	Woods, C. E. and Malina, J. F. Jr. "Anaerobic Stabilization of Wastewater Sludge and Glycine Uptake." Env. Health Eng. Tech. Report to USPHS, U. of Tex., Dec. 31, 1963.	
WP-00085	REMOVAL OF COLOR FROM SULFATE PULP WASH LIQUORS	Dr. Nelson F. Murphy, Dept. of Chem. Eng. Va. Polytechnic Inst. Blacksburg, Virginia
	Murphy, N. F. and Gregory, D. R. "Removal of Color from Sulfate Pulp Wash Liquors." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.	
WP-00092	EFFECTS OF THERMAL EFFLUENTS ON MARINE ORGANISMS	Dr. Morris L. Brehmer, Ecology-Poll. Dept. Virginia Inst. Marine Sci., Gloucester Pt.
	Warinner, J. E. and Brehmer, M. L. "The Effects of Thermal Effluents on Marine Organisms." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.	

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00093	DETERMINATION OF TOTAL ORGANIC CARBON IN WATER	Dr. T. E. Larson, Ill. State Water Survey, Univ. of Illinois, Urbana, Illinois

Larson, T. E., Sollo, F. W. and Gruner, B. J. "The Determination of Total Organic Carbon in Water." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

WP-00096	INTERNATIONAL CONFERENCE ON WATER POLLUTION RESEARCH	Ralph E. Fuhrman, Water Poll. Control Fed. 3900 Wisconsin Ave. N.W., Washington, D. C.

"Advances in Water Pollution Research, Proc. of the International Conference, London, Sept. 1962." Vol. I, II, and III, Pergamon Press, Oxford, England, 1964.

WP-00098	CHEMICAL ASPECTS OF COAGULATION	Dr. Werner Stumm, Div. of Eng. and Appl. Physics, Harvard U. Cambridge, Mass.

Ives, K. J., Morgan, J. J. and Stumm, W. "Mechanism of Coagulation in Water Treatment." J. San. Eng. Div., Proc. ASCE, Vol. 88, Nov. 1962.

Morgan, J. J. and Stumm, W. "Colloid-Chemical Properties of Manganese Dioxide." J. Colloid Science, Vol. 19, No.4, 1964.

Tenney, M. W. and Stumm, W. "Chemical Flocculation in Biological Treatment of Wastes." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

Stumm, W. and Morgan, J. J. "Chemical Aspects of Coagulation." JAWWA, Vol. 54, No. 8, Aug. 1962.

WP-00100	PRODUCTION OF PRO- AND ANTI-BACTERIALS BY MARINE ALGAE	Dr. J. McNeil Sieburth, Grad. School of Oceanogr. Univ. of Rhode Island, Kingston

Sieburth, J. M. and Pratt, D. M. "Anticoliform Activity of Sea Water Associated with the Termination of Skeletonema costatum Blooms." Trans. NY Acad. Sci., Ser 2, 24, Mar. 1962.

Sieburth, J. M. "Biochemical Warfare Among the Microbes of the Sea." Honors Lecture, U. of Rhode Island, Misc. Pub., 1962.

Sieburth, J. M. and Pratt, D. M. "Bacteria Phytoplankton Interrelationships in Narragansett Bay." Proc. 1st Nat. Coastal and Shallow Water Res. Conf., NSF ONR, Tallahassee, Fla., 1962.

Conover, J. T. and Sieburth, J. M. "Levelling Device for Preparation of Petri Plates at Sea." J. Bacteriol., Vol. 86, 1963.

Sieburth, J. M. "A Simple Form of the Zo Bell Bacteriological Sampler for Shallow Water." Limnol. and Ocean., Vol. 8, No. 4, Oct. 1963.

Sieburth, J. M., Frey, J. A. and Conover, J. T. "Microbiological Sampling with a Piggy-Back Device During Routine Nansen Bottle Casts." Deep-Sea Res., Vol. 10, 757-758, 1963.

Conover, J. T. and Sieburth, J. M. "Effect of Sargassum Distribution on Its Epibiota and Antibacterial Activity." Botanica Marina, Vol. 6, Fasc 1/2, Jan. 1964.

Sieburth, J. M. "Antibacterial Substances Produced by Marine Algae." Developments in Industrial Microbiology, Vol. 5, 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00100 (cont.)	PRODUCTION OF PRO- AND ANTI-BACTERIALS BY MARINE ALGAE	Dr. J. McNeil Sieburth, Grad. School of Oceanogr. Univ. of Rhode Island, Kingston

Sieburth, J. M. "Role of Algae in Controlling Bacterial Populations in Estuarine Waters." Comm. Int'l. pour L'Explor. Sci. de la Mer Mediterranee, April 1964.

WP-00107	AN ECONOMIC EVALUATION OF WATER POLLUTION CONTROL	Dr. E. N. Castle, Dept. of Agric. Economics, Oregon State University, Corvallis, Oregon

Stoevener, H. H. "An Economic Evaluation of Water Pollution Control Alternatives: A Progress Report." Conf. Proc., Comm. on Econ. of Water Resources Devel. of Western Agric. Econ. Research Council, Report No. 12, 1963.

Stoevener, H. H. "Water Use Relationships as Affected by Water Quality on the Yaquina Bay." New Horizons for Resources Research: Issues and Methodology, U. of Colo., 1964.

WP-00111	OPERATIONS RESEARCH IN WATER QUALITY MANAGEMENT	Dr. Harold A. Thomas, Jr., Div. Eng. and Appl. Physics, Harvard U. Cambridge, Mass.

Fiering, M. B. "System Analysis Applied to a Problem of Waterlogging and Salinity." Inter-American Assn. of San. Eng., June 1962.

Fiering, M. B. "Use of a Subsample in Parameter Estimation." J. Boston Soc. Civil Eng., Vol. 50, 1963.

Fiering, M. B. and Yotsukura, N. "Numerical Solution to a Dispersion Equation." J. Hyd. Div., Proc. ASCE, Vol. 90, HY5, Sept. 1964.

Fiering, M. B. "A Markov Model for Low Flow Analysis." J. Int'l. Assn. of Sci. Hyr., Vol. 9, 2, June 1964.

Fiering, M. B. "Multivariate Technique for Synthetic Hydrology." J. Hyd. Div., Proc. ASCE, Vol. 90, HY5, Sept. 1964.

Fiering, M. B. "A Note on the Regression Between Gamma Variates." J. Boston Soc. Civil Eng., Vol. 51, No. 3, July 1964.

Fiering, M. B. "The Nature of the Storage-Yield Relationship." Symp. on Water Quality Management, Cincinnati, April 1963.

Fiering, M. B. and Hufschmidt, M. "Design of Water Resource Systems and Its Relation to the Digital Computer." Presented to U. S. Army Corps of Eng. Symp., Boston, 1964.

Fiering, M. B. and Thomas, H. A. Jr. "The Storage-Yield Relationship." Pres. at ASCE Hydraul. Conf., Vicksburg, Miss., Aug. 1964.

Fiering, M. B. and Hufschmidt, M. "Design of Water Resource Systems." Proc. of Conf. on EDO Systems for State and Local Gov. NYU, 1964.

Spiegal, Z. "Discussion of Myron Fiering's 'The Nature of the Storage-Yield Relationship'." Symp. on Streamflow Reg. for Quality Control, USPHS Pub. No. 999-WP-30.

Thomas, H. A. Jr. "The Animal Farm: A Mathematical Model for the Discussion of Social Standards for Control of the Environment." Quart. J. of Econ., Vol. 77, Feb. 1963.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00111 (cont.)	OPERATIONS RESEARCH IN WATER QUALITY MANAGEMENT	Dr. Harold A. Thomas, Jr., Div. Eng. and Appl. Physics, Harvard U. Cambridge, Mass.
	Thomas, H. A. Jr. "Operations Research in Water Quality Management." Harvard Water Resources Group, Feb. 15, 1963.	
WP-00119	ENTERIC PATHOGENS AND VIRUSES IN IRRIGATION WATER	Dr. Stuart G. Dunlop, Dept. of Microbiology, U. of Colorado, Medical School, Denver
	Dunlop, S. G. and Wang, W. L. L. "Studies on the Use of Sewage Effluent for Irrigation of Truck Crops." J. Milk & Food Tech., Vol. 24, No. 2, Feb. 1961.	
	Wang, W. L. L. and Dunlop, S. G. "Effect of Glycerol on S. flexneri and Shigella Bacteriophage." Bact. Proc., Vol. 148:99, 1962. (abstract)	
	Wang, W. L. L., Dunlop, S. G. and Munson, P. "Survival of Shigella in Sewage. II. Effect of Glycerol on Shigella flexneri and Shigella Bacteriophage." Appl. Microbiol., Vol. 12, No. 3, May 1964.	
WP-00122	SEWAGE DECOMPOSITION IN ACID MINE DRAINAGE WATERS	Dr. H. A. Wilson, Dept. of Plant Pathol., Bact. & Entom., W. Va. Univ., Morgantown
	Wilson, H. A., Hipke, J. L. and Rogers, T. O. "Sewage Decomposition in Acid Mine Drainage Water." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.	
WP-00131	OXYGEN IN WASTE TREATMENT	Dr. Daniel A. Okun, Dept. Env. Sci. and Eng., Univ. of N. Carolina, Chapel Hill
	Sulzer, F. and Westgarth, W. "Continuous DO Recording in Activated Sludge." Water & Sewage Works, Oct. 1962.	
	Mancy, K. H. and Westgarth, W. C. "A Galvanic Cell Oxygen Analyzer." J. Water Pollution Control Fed., Vol. 34, No. 10, Oct. 1962.	
	Mancy, K. H., Okun, D. A. and Reilley, C. N. "A Galvanic Cell Oxygen Analyzer." J. of Electroanalytical Chem., Vol. 4: 65-92, 1962.	
	Mancy, K. H. and Okun, D. A. "Effect of Surface Active Agents on the Rate of Oxygen Transfer." Int'l. Jour. of Air and Water Pollution, Vol. 214: 111-112, 1963.	
	McKeown, J. J. and Okun, D. A. "Effects of Surface Active Agents on Oxygen Bubble Characteristics." Int'l. Jour. of Air and Water Pollution, Vol. 214: 113-122, 1963.	
	"Bibliography on Effect of Surface-Active Agents on Mass Transfer by Aeration." Dept. Env. Sci. & Eng., U. of No. Carolina, 1963.	
	Mancy, K. H. and Okun, D. A. "The Effect of Surface Active Agents on Aeration." Proc. 36th Ann. Meet. Water Pollution Control Fed., Seattle, Oct. 1963.	

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00133	THE EFFECT OF COMPOSITION OF WASTE WATER ON THE ACTIVATED SLUDGE CHARACTERISTICS	Dr. H. Heukelekian, Dept. of Env. Science, Rutgers Univ. New Brunswick, New Jersey

"The Effect of Chemical Composition of Substrate and Loading on the Performance and Bulking of Activated Sludge." Proc. 17th Ann. Purdue Industrial Waste Conf., May 1962.

Genetelli, E. J. and Heukelekian, H. "The Influence of Loading and Chemical Composition of Substrate on the Performance of Activated Sludge." J. Water Pollution Control Fed., Vol. 36, No. 5, May 1964.

WP-00135	THE INFLUENCE OF DISSOLVED OXYGEN ON FRESH-WATER FISHES	Dr. C. E. Warren, Dept. of Fish and Game Management, Oregon State U., Corvallis

Herrmann, R. B., Warren, C. E. and Doudoroff, P. "Influence of Oxygen Concentration on the Growth of Juvenile Coho Salmon." Trans. Am. Fisheries Soc., Vol. 91, No. 2, April 1962.

Stewart, N. E. "The Influence of Oxygen Concentration on the Growth of Juvenile Largemouth Bass." M.S. Thesis, Oregon State U., 1962.

Dahlberg, M. L. "Influence of Dissolved Oxygen and Carbon Dioxide on the Sustained Swimming Speed of Juvenile Largemouth Bass and Coho Salmon." M.S. Thesis, Oregon State U., 1963.

Fisher, R. J. "Influence of Oxygen Concentration and of Its Diurnal Fluctuations on the Growth of Juvenile Coho Salmon." M.S. Thesis, Oregon State U., 1963.

Shumway, D. L., Warren, C. E. and Doudoroff, P. "Influence of Oxygen Concentration and Water Movement on the Growth of Steelhead Trout and Coho Salmon Embryos." Trans. Am. Fisheries Soc., Vol. 93, No. 4, Oct. 1964.

Davis, G. E., Foster, J., Warren, C. E. and Doudoroff, P. "The Influence of Oxygen Concentration on the Swimming Performance of Juvenile Pacific Salmon at Various Temperatures." Trans. Am. Fisheries Soc., Vol. 92, No. 2, April 1963.

WP-00136	BIOCHEMICAL OXYGEN DEMAND OF PURE ORGANIC COMPOUNDS	Dr. H. Heukelekian, Dept. of Env. Science, Rutgers Univ. New Brunswick, New Jersey

McWhorter, T. R. and Heukelekian, H. "Growth and Endogenous Phases in the Oxidation of Glucose." int'l. Conf. on Water Pollution Research, London, Sept. 1962.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00139	A COMPREHENSIVE STUDY OF WATER COAGULATION	Dr. A. P. Black, Dept. of Chemistry, Univ. of Florida, Gainesville, Florida

Black, A. P. "Theory of Coagulation." Proc. U. of Mich. Conf. on Coagulation of Water for Filtration, Feb. 1962.

Black, A. P. (discussion) "Chemical Aspects of Coagulation." JAWWA, Vol. 54, No. 8, Aug. 1962.

Black, A. P. and Smith, A. L. "Determination of the Mobility of Colloidal Particles by Microelectrophoresis." JAWWA, Vol. 54, No. 8, Aug. 1962.

Black, A. P. "Mechanisms of Coagulation in Water Treatment." (discussion of a paper by S. Mackrle) J. San. Eng. Div., Proc. ASCE, Vol. 89, Part 1, 1963.

Black, A. P. and Christman, R. F. "Characteristics of Colored Surface Waters." JAWWA, Vol. 55, No. 6, June 1963.

Black, A. P. and Christman, R. F. "Chemical Characteristics of Fulvic Acids." JAWWA, Vol. 55, No. 7, July 1963.

Black, A. P. "Better Coagulation Processes for Better Water." Water Works Eng., Vol. 116, May 1963.

Black, A. P. and Walters, J. V. "Electrophoretic Studies of Turbidity Removal with Ferric Sulfate." JAWWA, Vol. 56, No. 1, Jan. 1964.

WP-00142	EFFECT OF PHYSICAL AND CHEMICAL VARIABLES ON REAERATION	Dr. Donald J. O'Connor, Dept. of Civil Eng. Manhattan College, Bronx, New York

O'Connor, D. J. "Effect of Stream Flow on Waste Assimilation Capacity." Proc. 17th Ann. Purdue Industrial Waste Conf., May 1962.

"Analog Computation of the Dispersion of Pollutants in the Delaware Estuary." Proc. 18th Ann. Purdue Industrial Waste Conf., May 1963.

"Analysis of Diffusion Data of the Delaware River Model." Int'l. Jour. of Air and Water Pollution, 1963.

WP-00143	AEROBIC DIGESTION IN THE LIQUID STATE	Dr. J. W. Clark, Dept. of Civil Eng. New Mexico State U., Univ. Park, N. Mexico

O'Brien, W. J. and Clark, J. W. "The Historical Development of the Biochemical Oxygen Demand Test." NMSU Eng. Exp. Sta. Bull. No. 20, Jan. 1962.

Young, J. C., Staffeldt, E. E. and Clark, J. W. "BOD of Selected Organisms." Water and Sewage Works, Vol. 110, No. 8, Aug. 1963.

"Electrolysis Biochemical Oxygen Demand." Southwest Water Works Jour., Vol. 46 (5): 26, Aug. 1964.

Young, J. C. and Clark, J. W. "Short Term BOD's by Electrolysis." Proc. 17th Okla. Industrial Waste Conf., Nov. 17-18, 1964.

Young, J. C., Garner, W. and Clark, J. W. "The Measurement of BOD's by Electrolysis." NMSU Eng. Exp. Sta. Tech. Rep. 20, Oct. 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00147	AQUATIC BACTERIA RELATED TO ACID-MINE DRAINAGE	Dr. Chester I. Randles, Dept. of Microbiol. The Ohio State U. Research Fdn., Columbus

Bigley, N. J., Dodd, M. C., Randles, C. I., Geyer, V. B. and Lacen, A. G. "Rho(D) Specificity of a Polysaccharide Isolated from a Species of Pseudomonas." J. Immun., Vol. 90, No. 4, April 1963.

WP-00151	AEROBIC METABOLISM OF CYANOGENIC COMPOUNDS	Dr. John B. Nesbitt, Dept. of Civil Eng. Pennsylvania State Univ., University Park

Murphy, R. S. and Nesbitt, J. B. "Biological Treatment of Cyanide Wastes." Eng. Res. Bull. B-88, Pennsylvania State U., June 1964.

Hill, W. H., Shapiro, M. A. and Kobayashi, Y. "Determination of Alkyl Benzene Sulfonate in Water." JAWWA, Vol. 54, No. 4, April 1962.

WP-00153	LOW FLOW AUGMENTATION FOR STREAM POLLUTION ABATEMENT	Dr. John C. Geyer, Dept. of Sanitary Eng. The Johns Hopkins Univ., Baltimore, Maryland

Hull, C. H. J. "Preliminary Report of an Investigation of Low-flow Augmentation for Stream-pollution Abatement." 1958.

Hull, C. H. J. "Bibliography on the Effects of Impoundments on Water Quality." Report No. II, Low-Flow Augmentation Project. Johns Hopkins U. April 1959.

Hull, C. H. J. "Bibliography on Biochemical Oxygen Demand." Report No. V, Low-Flow Augmentation Project. Johns Hopkins U. July 1959. (Rev. Feb. 1961)

Hull, C. H. J. and Carbaugh, H. C. "Progress Report on an Investigation of Low-Flow Augmentation for Stream Pollution Abatement." 1959, Rev. 1961.

Hull, C. H. J. "Simplified Technique for Determination of Theoretical and Effective Self-purification Coefficients of Polluted Streams." 1960.

Hull, C. H. J. "Public Water Policy on Low-flow Augmentation for Stream Pollution Abatement." Proc. 15th Ann. Purdue Industrial Waste Conf., 1960.

Hull, C. H. J. "Discussion: Oxygen Balance of an Estuary." J. San. Eng. Div., Proc. ASCE, Vol. 86, No. SA6, Nov. 1960 and Trans. ASCE, Vol. 126, Part III, Paper No. 3230, 1961.

Hull, C. H. J. "The Effects of Dams on a Drainage Basin." Symp. on Water Management in the Delaware Basin, Acad. of Nat. Sciences of Phila., Mar. 13-14, 1961.

Hull, C. H. J. "Algae and Organic Waste Assimilation in Tidal Estuaries." Proc. 34th Ann. Meeting Maryland-Delaware Water and Sewage Assn., 1961.

Hull, C. H. J. "Second Progress Report on an Investigation of Low-Flow Augmentation for Stream-Pollution Abatement." 1961.

Hull, C. H. J. "Seasonal Variation of Phytoplankton Oxygenation in a Polluted Tidal River." 27th Meeting of Atlantic Estuarine Research Soc., April 1962.

Geyer, J. C. and Hull, C. H. J. "Low-flow Augmentation for Water-quality Control." J. Water Pollution Control Fed., Vol. 35, No. 11, Nov. 1963.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00153 (cont.)	LOW FLOW AUGMENTATION FOR STREAM POLLUTION ABATEMENT	Dr. John C. Geyer, Dept. of Sanitary Eng. The Johns Hopkins Univ., Baltimore, Maryland

Hull, C. H. J. "Oxygenation of Baltimore Harbor by Planktonic Algae." J. Water Pollution Control Fed., Vol. 35, No. 5, May 1963.

Samworth, R. B. and DeFilippi, J. A. "Final Report on an Investigation of Low-flow Augmentation for Stream-pollution Abatement." Sept. 1963.

Hull, C. H. J. "Photosynthetic Oxygenation of a Polluted Estuary." Proc. Int'l. Conf. on Water Pollution Research, London, Sept. 1962. (Vol. 3, pp. 347-403)

Hull, C. H. J. "Photosynthesis as a Factor in the Oxygen Balance of Reservoirs." Symp. on Streamflow Regulation for Quality Control. Taft San. Eng. Center, Cincinnati, O., April 3-5, 1963.

WP-00156	OCEANOGRAPHIC FACTORS IN THE WASTE DISPOSAL SYSTEMS	Dr. Joe W. Johnson, Div. of Hydraulic and San. Eng. Univ. of California, Berkeley, Calif.

Hart, W. E. "Jet Discharge into Fluid with Density Gradient." J. Hydr. Div., Proc. ASCE, Vol. 87, HY6, Nov. 1961.

WP-00157	ECOLOGICAL STUDIES OF AN EXPERIMENTAL STREAM	Dr. C. E. Warren, Dept. of Fish and Game Management, Oregon State Univ., Corvallis, Oregon

Kraft, G. F. "Seasonal Occurrence and Distribution of Aquatic Insects in Berry Creek." Ph.D. Thesis, Oregon State U., 1963.

Dever, J. E. Jr. "Plant Production in a Woodland Stream under Controlled Conditions." M.S. Thesis, Oregon State U., 1962.

Warren, C. E., Wales, J. H., Davis, G. E. and Doudoroff, P. "Trout Production in an Experimental Stream Enriched with Sucrose." J. Wildlife Management, Vol. 28, No. 4, Oct. 1964.

Mason, J. C. "Life History and Production of Crayfish, Pacifastacus leniusculus trowbridgii (Stimpson) in a Small Woodland Stream." M.S. Thesis, Oregon State U., 1963.

WP-00158	BENTHONIC FORAMINIFERA RELATIONSHIP TO OCEAN POLLUTION	Dr. Orville L. Bandy, Dept. of Geology, Univ. of So. California, Los Angeles

Resig, J. M. "Foraminiferal Ecology around Ocean Outfalls off Southern California." In Waste Disposal in the Marine Environment. Pergamon Press, 1960.

Resig, J. M. "The Morphological Development of Eponides repandus (Fichtel and Moll) 1798." Contrib. Cushman Found. Foraminiferal Res., Vol. 13, pt. 2, April 1962.

Resig, J. M. "Size Relationships of Eggerella advena to Sediment and Depth of Substratum." In Essays in Marine Geology in Honor of K. O. Emery. U. of So. Cal. Press, ed. T. Clements and D. M. Halmos, 1963.

Bandy, O. L., Ingle, J. C., Jr. and Resig, J. M. "Foraminiferal Trends, Laguna Beach Outfall Area." Limnol. and Ocean., Vol. 9, No. 1, Jan. 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00158 (cont.)	BENTHONIC FORAMINIFERA RELATIONSHIP TO OCEAN POLLUTION	Dr. Orville L. Bandy, Dept. of Geology, Univ. of So. California, Los Angeles

Bandy, O. L., Ingle, J. C., Jr. and Resig, J. M. "Foraminifera, Los Angeles County Outfall Area, California." Limno. and Ocean., Vol. 9, No. 1, Jan. 1964.

Bandy, O. L., Ingle, J. C., Jr. and Resig, J. M. "Facies Trends, San Pedro Bay, California." Geol. Soc. of Amer. Bull., Vol. 75, May 1964.

Resig, J. M. "The Southernmost Occurrence of Elphidiella hannai (Cushman and Grant), 1927, off the West Coast of North America." J. Paleontol., Vol. 38, No. 2, 1964.

WP-00160	EVAPORATION SUPPRESSION AND ITS EFFECT ON BIOTA	Dr. Joseph B. Franzini, Dept. of Civil Eng. Stanford Univ., Stanford, California

Franzini, J. B. and Rowland, W. F. "Progress Report on Radiation Integrator Research." Civil Eng. Dept., Stanford U., May 1960.

Franzini, J. B. "Evaporation Suppression Research." Water and Sewage Works, Vol. 108, May and June 1961.

WP-00161	FOAM FRACTIONATION WITH REFLUX	Dr. Robert Lemlich, Dept. of Chemical Eng. Univ. of Cincinnati, Cincinnati, Ohio

Brunner, C. A. and Lemlich, R. "Foam Fractionation." Indust. and Eng. Chem. Fund., Vol. 2:297, 1963.

Lemlich, R. and Hwu, C. K. "Effects of Acoustic Vibration on Forced Convective Mass Transfer." AIChE Jour., Vol. 7:102, 1961.

Lemlich, R. "Vibration and Pulsation Boost Heat Transfer." Chem. Eng., Vol. 68, No. 10, 1961.

Lemlich, R. and Levy, M. R. "Effects of Vibration on Natural Convective Mass Transfer." AIChE Jour., Vol. 7:240, 1961.

Lemlich, R. and Lavi, E. "Foam Fractionation with Reflux." Science, Vol. 134, No. 3473, July 21, 1961.

Lemlich, R. and Leonard, R. A. "Unified Vectorial Approach to Difference Point Methods in Stagewise Operations." AIChE Jour., Vol. 8, No. 2, May 1962.

WP-00164	HARVESTING OF ALGAE	Dr. Gilbert V. Levin, Life Systems Division, Hazelton Laboratories, Inc., Fall Church, Va.

Levin, G. V., Clendenning, J. R., Gibor, A. and Bogar, F. B. "Harvesting of Algae by Froth Flotation." Appl. Microbiol., Vol. 10, No. 2, March 1962.

Levin, G. V. "Rapid Microbiological Determinations with Radioisotopes." Adv. Appl. Microbiol., Vol. 5, Academic Press, 1963.

Levin, G. V. and Barnes, J. M. "Froth Flotation for Harvesting Algae and its Possible Application to Sewage Treatment." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00165	GAS TRANSPORT INTO AND OUT OF AQUEOUS TYPE SOLUTIONS	Dr. David M. Himmelblau, Dept. of Chem. Eng. The Univ. of Texas, Austin, Texas

Gibbs, R. K. and Himmelblau, D. M. "Effect of Concentration on the Gas-Liquid Mass Transfer Coefficient." I&EC Fund., Vol. 2, No. 1, Feb. 1963.

Tang, Y. P. and Himmelblau, D. M. "Interphase Mass Transfer for Laminar Concurrent Flow of Carbon Dioxide and Water between Parallel Plates." AIChE Jour., Vol. 9, No. 5, Sept. 1963.

WP-00176	OXYGEN RESOURCES OF TIDAL WATERS	Dr. J. P. Barlow, Dept. of Conservation Cornell University, Ithaca, New York

Barlow, J. P. and Myren, R. T. "Oxygen Resources of Tidal Waters." Water and Sewage Works, Vol. 108, (2), Feb. 1961.

Lorenzen, C. J. "Diurnal Variations in Photosynthetic Activity of Natural Phytoplankton Populations." Limnol. and Ocean., Vol. 8, No. 1, Jan. 1963.

Barlow, J. P., Lorenzen, C. J. and Myren, R. T. "Eutrophication of a Tidal Estuary." Limnol. and Ocean., Vol. 8, No. 2, April 1963.

WP-00181	DISPERSION AND DIFFUSION OF HEATED COOLANT WATER	Carl H. Strandberg, General Research and Development, Inc., Washington, D. C.

Strandberg, C. H. "Analysis of Thermal Pollution From the Air." Proc. 17th Ann. Purdue Industrial Waste Conf., May 3, 1962.

WP-00183	HYDRAULIC CHARACTERISTICS OF CIRCULAR SEDIMENTATION BASINS	Dr. James R. Villemonte, Dept. of Civil Eng. Univ. of Wisconsin, Madison, Wisconsin

Villemonte, J. R. and Rohlich, G. A. "Hydraulic Characteristics of Circular Sediment Basins." Proc. 17th Ann. Purdue Industrial Waste Conf., May 1962.

WP-00187	INVESTIGATION OF RIVER BOD ABNORMALITIES	Dr. John J. Gannon, Dept. of Env. Health, Univ. of Michigan, Ann Arbor, Michigan

Gannon, J. J. and Downs, T. D. "Programming River D.O. Calculations." Water and Sewage Works, Part I - Vol. 110, No. 3, March 1963. Part II - Vol. 110, No. 4, April 1963. Part III - Vol. 110, Ref. No., Oct. 1963.

Gannon, J. J. "River BOD Abnormalities, A Case Study Approach, Clinton River below Pontiac, Michigan and Tittabawassee River below Midland, Michigan." Final Report on Research Grant. Nov. 1963.

Gannon, J. J. "The Interpretation and Analysis of Hydrologic Data." Proc. Symp. on Env. Measure., USPHS Publ. No. 999, WP-15, July 1964.

WP-00188	BIODEGRADATION OF HALOGENATED PHENOLICS	Dr. Robert S. Ingols, Eng. Experiment Station, Georgia Institute of Technology, Atlanta, Ga.

Ingols, R. S. and Stevenson, P. C. "Biodegradation of the Carbon Chlorine Bond." Research Engineer, Vol. 18, No. 5, Dec. 1963.

Ingols, R. S. and Stevenson, P. C. "Biodegradation of Chlorinated Organic Compounds." Final Report, Eng. Exp. Sta., Geo. Inst. of Tech., Jan. 1, 1960 - Dec. 31, 1962.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00193	ALGAE-BACTERIA COMPLEXES IN OXIDATION PONDS	Dr. Robert G. Tischer, Dept. of Microbiology, Mississippi State Univ., State College, Miss.

Tischer, R. G., Brown, L. R. and Cook, D. W. "Decomposition of Wastewater by Thermophilic Microorganisms." J. Water Pollution Control Fed., Vol. 34, No. 12, Dec. 1962.

Tischer, R. G., Cook, D. W. and Brown, L. R. "The Effect of Inorganic Ions on the Stabilization of Domestic Sewage by a Thermophilic Bacterium." Developments in Industrial Microbiology. Vol. 4, 1963.

Cook, D. W., Brown, L. R. and Tischer, R. G. "A Carbon Dioxide Requirement for the Initiation of Growth of Germinated Spores of Two Thermophilic Bacilli." Developments in Industrial Microbiology. Vol. 5, 1964.

WP-00196	DESIGN REQUIREMENTS FOR MUNICIPAL DIATOMITE FILTERS	Dr. Paul E. Morgan, Dept. of Civil Eng. Iowa State Univ. of Sci. and Tech., Ames

"Pure Water While You Wait." Am. City, Dec. 1963.

Baumann, E. R. and Oulman, C. S. "Modified Form of Diatomite Filtration Equation." JAWWA, Vol. 56, No. 3, March 1964.

Baumann, E. R. and Oulman, C. S. "Pilot Studies of Diatomite Filtration." Water Works Eng., Vol. 116, No. 5, May 1963.

Baumann, E. R. "Diatomite Filters for Municipal Installations." JAWWA, Vol. 49, No. 2, Feb. 1957.

Baumann, E. R., Miley, J. F. and Morgan, P. E. "Operation of Pressure vs. Vacuum Diatomite Filters Using Iron-containing Water." Progress Report, Eng. Exp. Sta., Iowa State U., July 1959.

Baumann, E. R., Cleasby, J. L. and La Frenz, R. L. "A Theory of Diatomite Filtration." JAWWA, Vol. 54, No. 9, Sept. 1962.

La Frenz, R. L. and Baumann, E. R. "Optimums in Diatomite Filtration." JAWWA, Vol. 54, No. 7, July 1962.

Baumann, E. R. and La Frenz, R. L. "Optimum Economical Design for Municipal Diatomite Filtration Plants." JAWWA, Vol. 55, No. 1, Jan. 1963.

Baumann, E. R., Cleasby, J. L. and Morgan, P. E. "Theoretical Aspects of Diatomite Filtration." Water and Sewage Works, Part I - Vol. 111, No. 5, May 1964. Part II - Vol. 111, No. 6, June 1964. Part III - Vol. 111, No. 7, July 1964.

Dillingham, J. H. and Baumann, E. R. "Hydraulic and Particle Size Characteristics of Some Diatomite Filter Aids." JAWWA, Vol. 56, No. 6, June 1964.

Oulman, C. S. and Baumann, E. R. "Streaming Potentials in Diatomite Filtration of Water." JAWWA, Vol. 56, No. 7, July 1964.

Oulman, C. S., Burns, D. E. and Baumann, E. R. "Effect on Filtration of Polyelectrolyte Coatings of Diatomite Filter Media." JAWWA, Vol. 56, No. 9, Sept. 1964.

Cleasby, J. L. and Baumann, E. R. "Permeability of Filter Cakes Containing Various Flocculent Solids." Progress Report, Eng. Exp. Sta., Iowa State U., April 30, 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00199	INORGANIC-ORGANIC INTERACTIONS IN NATURAL WATERS	Dr. Joseph Shapiro, Dept. of Sanitary Eng. Johns Hopkins Univ., Baltimore, Maryland

Shapiro, J. "Effect of Yellow Organic Acids on Iron and Other Metals in Water." JAWWA, Vol. 56, No. 8, Aug. 1964.

Shapiro, J. "Vacuum Filtration of Large Volumes in the Laboratory." Science, 136:988, June 1962.

WP-00202	METHODS FOR MEASURING THE COLIFORM CONTENT OF WATER	John E. Delaney, Massachusetts Health Res. Institute, Inc., Lawrence, Massachusetts

Delaney, J. E., McCarthy, J. A. and Grasso, R. J. "Measurement of E. coli Type I by the Membrane Filter." Water and Sewage Works, Aug. 1962.

WP-00204	METABOLISM OF MARINE BAYS OF TEXAS	Dr. Patrick L. Parker, Inst. of Marine Sci. The Univ. of Texas, Austin, Texas

Copeland, B. J. "Industrial Pollution in Marine Ecosystems." Pollutions Marines par les Microorganisms et les Produits Petroliers. Symp. de Monaco, April 1964.

Copeland, B. J. and Duffer, W. R. "Use of a Clear Plastic Dome to Measure Gaseous Diffusion Rates in Natural Waters." Limnol. and Ocean., Vol. 9, No. 4, Oct. 1964.

"The Paradox that Film Ecosystems Are Anaerobic Basins." Proc. 1st Nat. Coastal Shallow Water Res. Conf., Talahassee, Fla., p. 897, 1962.

WP-00206	ORGANIC PESTICIDES AND HERBICIDES FROM WATER	Dr. Samuel D. Faust, Dept. of Env. Science, Rutgers, The State Univ., New Brunswick, N.J.

"Some Effects of 2, 4-D on Drinking Water Quality." Hyacirth Control Jour., 1:10, 1962.

Faust, S. D. and Aly, O. M. "Determination of 2, 4-DCP in Water." JAWWA, Vol. 54, No. 2, Feb. 1962.

Faust, S. D., Younger, R. R., Tucker, R. J. and Aly, O. M. "Observations on the Occurrence and Persistence of 2, 4-D and 2, 4-DCP in Lake Water." Proc. NEWCC, Vol. 16, Jan. 1962.

Faust, S. D. and Aly, O. M. "Some Effects of 2, 4-D and 2, 4-DCP on Drinking Water Quality." Proc. NEWCC, Vol. 17, Jan. 1963.

Faust , S. D. and Aly, O. M. "Water Pollution by Organic Pesticides." JAWWA, Vol. 56, No. 3, March 1964.

Faust, S. D. and Aly, O. M. "Evaluation of the Solubilities of the Calcium and Magnesium Salts of 2.4-dichlorophenoxy Acetic Acid." J. Chem. & Eng. Data, Vol. 8, No. 3, July 1963.

Aly, O. M. and Faust, S. D. "Studies on the Removal of 2, 4-D and 2, 4-DCP from Surface Waters." Proc. 18th Ann. Purdue Industrial Waste Conf., May 1963.

Aly, O. M. and Faust, S. D. "Determination of 2, 4-D in Surface Waters." JAWWA, Vol. 55, No. 5, May 1963.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00206 (cont.)	ORGANIC PESTICIDES AND HERBICIDES FROM WATER	Dr. Samuel D. Faust, Dept. of Env. Science, Rutgers, The State Univ., New Brunswick, N. J.

Aly, O. M. and Faust, S. D. "Studies on the Fate of 2, 4-D and Ester Derivatives in Surface Waters." Ag. and Food Chem., Vol. 12, No. 6, Nov./Dec. 1964.

"Organic Pesticide Pollution of the Water Environment." News & Views, Bur. of Conserv. & Env. Science, No. 5, Feb. 1964.

Faust, S. D. "Pollution of the Water Environment by Organic Pesticides." Clin. Pharmacol. and Therap., Vol. 5, No. 6, Part 1, Nov./Dec. 1964.

Aly, O. M. and Faust, S. D. "Determination of Phenoxyacetic Acids with J and Phenyl J Acids." Anal. Chem., Vol. 36, No. 11, Oct. 1964.

WP-00208	NATURE AND DISINFECTING POWER OF SUBCHLORINE RESIDUALS	Dr. Tsuan Hua Feng, Dept. of Civil Eng. University of Massachusetts, Amherst, Mass.

Feng, T. H. "Subchlorination of Wastewater." J. Water Pollution Control Fed., Vol. 35, No. 4, April 1963.

"Behavior of Organic Chloramines in Disinfection." ACS, Div. of Water, Air and Waste Chem., Vol. 4, No. 2, 1964.

WP-00209	BIOLOGICAL FACTORS IN THE MANAGEMENT OF LAKE FLIES	Dr. William L. Hilsenhoff, Dept. of Entomol. Univ. of Wisconsin, Madison, Wisconsin

Hilsenhoff, W. L. "Predation by the Leech Helobdella nepheloidea on Larvae of Tendipes plumosus (Diptera: Tendipedidae)." Annals of Entomol. Soc. of Amer., Vol. 57, No. 1, Jan. 1964.

Hilsenhoff, W. L. "Predation by the Leech Helobdella stagnalis on Tendipes plumosus (Diptera: Tendipedidae) Larvae." Annals of Entomol. Soc. of Amer., Vol. 56, No. 2, March 1963.

Hilsenhoff, W. L. "Granulated Malathion as a Possible Control for Tendipes plumosus (Diptera: Tendipedidae)." J. Econ. Ent., Vol. 55, No. 1, Feb. 1962.

Hilsenhoff, W. L. "Toxicity of Granular Malathion to Walleyed Pike Fingerlings." Mosquito News, Vol. 22, No. 1, March 1962.

WP-00212	CONTINUOUS FLOW AND BATCH CULTURES OF SPHAEROTILUS	Dr. Norman C. Dondero, Dept. of Env. Sci. Rutgers, The State Univ., New Brunswick, N.J.

Okrend, H. and Dondero, N. C. "Observations on the Nutrition of Sphaerotilus natans in Batch Culture." Bact. Proc., p. 24, 1964.

Okrend, H. and Dondero, N. C. "Requirement of Sphaerotilus for Cyanocobalamin." J. Bact., Vol. 87, No. 2, Feb. 1964.

WP-00213	ANALYSIS OF TRICKLING FILTERS (MATHEMATICAL MODEL)	Dr. William F. Ames, Dept. of Mechanical Eng., Univ. of Delaware, Newark, Delaware

Ames, W. F., Behn, V. C. and Collings, W. Z. "Transient Operation of the Trickling Filter." J. San. Eng. Div., Proc. ASCE, May 1962.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00213 (cont.)	ANALYSIS OF TRICKLING FILTERS (MATHEMATICAL MODEL)	Dr. William F. Ames, Dept. of Mechanical Eng., Univ. of Delaware, Newark, Delaware

Behn, V. C., Ames, W. F. and Keshavan, K. "Trickling Filter Design and Performance." J. San. Eng. Div., Proc. ASCE, Jan. 1962.

Ames, W. F., Collings, W. Z. and Behn, V. C. "Diffusion and Reaction in the Biota of the Trickling Filter." Tech. Report 19, Dept. of Mech. Eng., U. of Del., Oct. 1962.

Keshavan, K., Behn, V. C. and Ames, W. F. "Kinetics of Aerobic Removal of Organic Wastes." J. San. Eng. Div., Proc. ASCE, Vol. 90, No. SA1, Feb. 1964.

WP-00215	ANALYSIS OF ORGANIC PESTICIDES BY GAS CHROMATOGRAPHY	Dr. Ervin Hindin, Div. of Industrial Research, Washington State Univ., Pullman, Washington

Hindin, E., May, D. S., McDonald, R. and Dunstan, G. H. "Analysis of Volatile Fatty Acids in Sewage by Gas Chromatography." Water and Sewage Works, Vol. 111, No. 2, Feb. 1964.

Hindin, E., Hatten, M. J., May, D. S., Skrinde, R. T. and Dunstan, C. H. "Analysis of Synthetic Organic Pesticides in Water." JAWWA, Vol. 54, No. 1, Jan. 1962.

WP-00216	CAUSES AND RELIEF OF HYPER-EUTROPHICATION OF LAKES	Dr. James L. Yount, Florida State Board of Health, Winter Haven, Florida

"A Note on Stability in Central Florida Lakes with Discussion of the Effect of Hurricanes." Limnol. and Ocean., Vol. 6, No. 3, July 1961.

Yount, J. L. "South Atlantic States." Limnology in North America. U. of Wis. Press, 1963.

Yount, J. L. "Aquatic Nutrient Reduction - Potential and Possible Methods." Report of 35th Ann. Meet. Fla. Anti-Mosquito Assn., 1964.

WP-00219	PHYSICAL BIOLOGY OF WASTE TREATMENT	Dr. Wesley O. Pipes, Dept. of Civil Eng. Northwestern Univ., Evanston, Illinois

Pipes, W. O. "CO_2 Limited Growth of Chlorella in Continuous Cultures." Appl. Microbiol., Vol. 10, No. 4, July 1962.

Pipes, W. O., Boyle, O. W. and Miholits, E. M. "Aerobic Cell Yield and Theoretical Oxygen Demand." Proc. 18th Ann. Purdue Industrial Waste Conf., May 1963.

Grieves, R. B., Milbury, W. F. and Pipes, W. O. "A Mixing Model for Activated Sludge." J. Water Pollution Control Fed., Vol. 36, No. 5, May 1964.

Grieves, R. B., Milbury, W. F. and Pipes, W. O. "The Effect of Short - Circuiting upon the Completely - Mixed Activated Sludge Process." Int'l. Jour. of Air & Water Pollution, Vol. 8: 199-214, 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00220	DISPERSION OF CONTAMINANTS IN FLOW THROUGH POROUS MEDIA	Dr. Donald R. F. Harleman, Dept. of Civil Eng. Massachusetts Inst. of Tech., Cambridge, Mass.

Rumer, R. R. Jr. "Longitudinal Dispersion in Steady and Unsteady Flow." J. Hydr. Div., Proc. ASCE, HY4, July 1962.

Harleman, D. R. F., Melhorn, P. F. and Rumer, R. R. Jr. "Dispersion - Permeability Correlation in Porous Media." J. Hydr. Div., Proc. ASCE, HY2, March 1963.

Harleman, D. R. F. and Rumer, R. R. Jr. "Longitudinal and Lateral Dispersion in an Isotropic Porous Medium." J. of Fluid Mech., Vol. 16, Part II, July 1963.

Rumer, R. R. Jr. and Harleman, D. R. F. "Intruded Salt-Water Wedge in Porous Media." J. Hydr. Div., Proc. ASCE, Vol. 89, HY6, Nov. 1963.

Harleman, D. R. F. and Rumer, R. R. Jr. "Dynamics of Salt Water Intrusion in Porous Media." M.I.T. Hydrodynamics Lab., Tech. Rep. No. 55, Aug. 1962.

Harleman, D. R. F., Melhorn, P. F. and Rumer, R. R. Jr. "Longitudinal Dispersion in Uniform Porous Media." M.I.T. Hydrodynamics Lab., Rech. Rep. No. 57, Aug. 1962.

WP-00221	ECOLOGY OF DIATOMS IN HARD-WATER HABITATS	Dr. John D. Dodd, Dept. of Botany and Pathol. Iowa State Univ. of Sci. & Tech., Ames, Iowa

Volker, R. P. "Some Aspects of the Ecology of Lake East Okoboji, Iowa." Proc. Iowa Acad. Sci., 69:99-107, 1962.

Dodd, J. D. and Stoermer, E. F. "Notes on Iowa Diatoms I. An Interesting Collection from a Moss-Lichen Habitat." Proc. Iowa Acad. Sci., 69:83-87, 1962.

Drum, R. W. "The Non-siliceous Fine Structure of a Diatom." 5th Int'l. Congress for Electron Microscopy, Academic Press, Inc., N. Y., 1962.

Drum, R. W. "Notes on Iowa Diatoms III. Ocurrence of the Genus, Pleurosigma, in the Des Moines River." Proc. Iowa Acad. Sci., 69:96-98, 1962.

Stoermer, E. F. "Notes on Iowa Diatoms II. Species Distribution in a Subaerial Habitat." Proc. Iowa Acad. Sci., 69:87-95, 1962.

Stoermer, E. F. "Post-Pleistocene Diatoms from Lake West Okoboji, Iowa." Ph.D. Thesis, Iowa State U., 1963.

Drum, R. W. "Notes on Iowa Diatoms V. Epilithic Diatom Biomass in The Des Moines River." Proc. Iowa Acad. Sci., 70:74-79, 1963.

Drum, R. W. "The Cytoplasmic Fine Structure of the Diatom, Nitzchia palea." J. Cell. Biology, 18:429-440, 1963.

Drum, R. W. and Pankratz, H. S. "Fine Structure of a Diatom Centrosome." Science, 142:(No. 3588) 61-63, 1963.

Drum, R. W. and Pankratz, H. S. "Porous Plates in the Punctae of a Small Nitzchia." Microscope and Crystal Front, 14:1-4, 1963.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00221 (cont.)	ECOLOGY OF DIATOMS IN HARD-WATER HABITATS	Dr. John D. Dodd, Dept. of Botany and Pathol. Iowa State Univ. of Sci. & Tech., Ames, Iowa

Shobe, W. R., Stoermer, E. F. and Dodd, J. D. "Notes on Iowa Diatoms IV. The Diatoms in a Northwest Iowa Fen." Proc. Iowa Acad. Sci., 70:71-74, 1963.

Stoermer, E. F. "New Taxa and New U.S. Records of the Diatom Genus Neidium from West Lake Okoboji, Iowa." Notula Naturae Acad. Nat. Sci., Phila. 1963.

Drum, R. W. "Notes on Iowa Diatoms VI. Frustular Aberrations in Cultures of Surirella ovalis." Proc. Iowa Acad. Sci., 71, 1964.

Drum, R. W. "Ecology of Diatoms in the Des Moines River." Ph.D. Thesis, Iowa State U., 1964.

Drum, R. W. "Ultrastructure of Diatoms." Symp. on Fine Structure of Algae, at 15th Ann. Meet. AIBS, Boulder, Colo., Aug. 1964.

Drum, R. W. and Pankratz, H. S. "Pyrenoids, Raphes, and Other Fine Structure in Diatoms." Amer. Jour. Bot., 51:405-418, 1964.

Drum, R. W. and Pankratz, H. S. "Post Mitiotic Fine Structure of Gomphonema parvulum." J. Ultrastructure Res., 10:217-223, 1964.

Ohl, L. "Notes on Iowa Diatoms VIII. Winter Bloom of Synedra acus in a Farm Pond." Proc. Iowa Acad. Sci., 71, 1964.

Stoermer, E. F. "Notes on Iowa Diatoms VII. Rare and Little Known Diatoms from Iowa." Proc. Iowa Acad. Sci., 71, 1964.

Stoermer, E. F. "Taxonomic Implications of Ultrastructure of Algae." Symp. on Fine Structure of Algae, at 15th Ann. Meet. of AIBS, Boulder, Colo., Aug. 1964.

Stoermer, E. F., Pankratz, H. S. and Drum, P. W. "The Fine Structure of Mastogloia grevillei W. M. Smith." Protoplasma, 1964.

Stoermer, E. F. and Pankratz, H. S. "Fine Structure of the Diatom, Amphipleura peliucida." Amer. Jour. Bot., 51:986-990, 1964.

WP-00222	EXTEND DESIGN CRITERIA FOR WASTE STABILIZATION PONDS	Dr. Earnest F. Gloyna, Dept. of Civil Eng. The Univ. of Texas, Austin, Texas

Gloyna, E. F. and Suwannakarn, V. "Temperature Effects on Waste Stabilization Pond Treatment." Symp. Waste Treatment by Oxidation Ponds, Central Public Health Eng. Res. Inst., Nagpur, India, Oct. 29-30, 1963.

Gloyna, E. F. and Suwannakarn, V. "Efecto de la Temperatura en el Tratamiento de Aquas Residuales Mediante estonques de establizacion." Boletin de la Oficina Sanitaria Panamericana, Ano 43, LVI, 2, Feb. 1964.

WP-00223	EFFECT OF PAPER FIBER WASTE ON FISH EGGS AND JUVENILES	Dr. L. L. Smith, Jr., Dept. of Entomol., Fisheries & Wildlife, U. of Minnesota

Smith, L. L. Jr. and Kramer, R. H. "Survival of Walleye Eggs in Relation to Wood Fibers and Sphaerotilus natans in the Rainy River, Minnesota." Trans. Am. Fisheries Soc., Vol. 92, No. 3, July 1963.

GRANT No.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00226	ECOLOGY-WATER QUALITY CHANGES IN LAKES MICHIGAN, ERIE	Dr. John C. Ayers, Great Lakes Research Div. Univ. of Michigan, Ann Arbor, Michigan

Bellaire, F. R. "Relation of Winds, Water Levels and Water Temperatures to Currents in Lower Lake Michigan." GLRD Pub. No. 10, U. of Mich., 1963.

Jones, D. L. and Bellaire, F. R. "A Numerical Procedure for Computing Wind-driven Currents on the Great Lakes." GLRD Pub. No. 9, U. of Mich., 1962.

McLain, D. R. "Relations between Conductivity and Residues on Evaporation for Two Great Lakes Waters." M.S. Thesis, U. of Mich., 1963.

Bellaire, F. R. "A Comparison of Methods of Current Determinations." GLRD Pub. No. 11, U. of Mich., 1964.

Powers, C. F. "Studies of Eutrophication Processes in the Great Lakes." GLRD Pub. No. 9 (abs.), U. of Mich., 1962.

Powers, C. F. "A Preliminary Assessment of Some of the Factors Affecting the Water Quality of Southern Lake Michigan." GLRD Pub. No. 11, (abs.), U. of Mich., 1964.

WP-00228	EFFECT OF LOADING ON ASSIMILATION IN ACTIVATED SLUDGE	Dr. Donald R. Washington, Dept. of Civil Eng. Rensselaer Polytechnic Inst., Troy, New York

Washington, D. R., Hetling, L. J. and Rao, S. S. "The Mathematics of Complete-Mixing Activated Sludge." J. San. Eng. Div., Proc. ASCE, Vol. 89, SA1, Jan. 1963.

Rao, S. S., Hetling, L. J. and Washington, D. R. "Spot-plate Technique for Measuring Bacterial Densities." Indian J. of Exp. Biol., April 1963.

Rao, S. S., Washington, D. R. and Hetling, L. J. "Percent Viabilities - A Measure of Activity." Waste Eng., Dec. 1963.

Washington, D. R. "Theory of Extended Aeration Activated Sludge." Gas Vent - N. Y. Water Pollution Control Assn. Jour., Dec. 1964.

Rao, S. S., Hetling, L. J. and Washington, D. R. "Correlation of Percent Viabilities." Naturwissenschaften, Vol., 51, No. 3, 1964.

Washington, D. R. "Kinetics of Extended Aeration." Proc. 13th So. Mun. and Indust. Waste Conf., April 16-17, 1964.

Martin, E. J. and Washington, D. R. "Kinetics of Steady State Bacterial Culture. I - Mathematical Model." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

Hetling, L. J., Washington, D. R. and Rao, S. S. "Kinetics of the Steady-State Bacterial Culture. II - Variations in Synthesis." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

WP-00229	MASS TRANSFER INTO NON-NEWTONIAN SYSTEMS	Dr. V. C. Behn, Dept. of Sanitary Eng. Cornell University, Ithaca, New York

Clough, S. B., Read, H. E., Metzner, A. B. and Behn, V. C. "Diffusion in Slurries and in Non-Newtonian Systems." AIChE Jour. Vol. 8, No. 3, July 1962.

Behn, V. C. "Experimental Determination of Sludge-Flow Parameters." J. San. Eng. Div., Proc. ASCE, Vol. 88, May 1962.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00229 (cont.)	MASS TRANSFER INTO NON-NEWTONIAN SYSTEMS	Dr. V. C. Behn, Dept. of Sanitary Eng. Cornell University, Ithaca, New York

Behn, V. C. and Shane, R. M. "Capillary versus Pipeline on Determining Flow Behavior of Digested Sewage Sludge." Water and Sewage Works, Vol. 110, July 1963.

WP-00230	REACTION KINETICS OF ANAEROBIC FERMENTATION SYSTEMS	Dr. Erman A. Pearson, Div. of Hydraul. and San. Eng., Univ. of California, Berkeley

Agardy, F. J., Cole, R. D. and Pearson, E. A. "Kinetic and Activity Parameters of Anaerobic Fermentation Systems." U. of Cal., San. Eng. Res. Lab., SERL Pub. No. 63-2, 1963.

Agardy, F. J., Cole, R. D. and Pearson, E. A. "Enzyme Activity as a Parameter of Digester Performance." Proc. 18th Ann. Purdue Industrial Waste Conf., May 1963.

Agardy, F. J., Cole, R. D. and Pearson, E. A. "Nutrient Requirements and Biological Solids Accumulation in Anaerobic Digestion." Advances in Water Pollution Res., Vol. 2, Pergamon Press, London 1964.

Andrews, J. F., Thomas, J. F. and Pearson, E. A. "Determination of Volatile Acids by Gas Chromatography." Water and Sewage Works, Vol. 111, April 1964.

Andrews, J. F., Cole, R. D. and Pearson, E. A. "Kinetics and Characteristics of Multi-Stage Methane Fermentation." U. of Cal., San. Eng. Res. Lab., SERL Pub. No. 64-11, Dec. 1964.

WP-00231	TREATMENT OF ORGANIC INDUSTRIAL WASTES BY LAGOONING	Dr. Robert C. Cooper, Dept. of Pub. Health, Univ. of California, Berkeley, California

Cooper, R. C. "Photosynthetic Bacteria in Waste Treatment." U. of Cal., San. Eng. Res. Lab., 1962.

Cooper, R. C. "Photosynthetic Bacteria in Waste Treatment." Developments in Industrial Microbiology, Vol. 4, 1963.

WP-00234	ANALYSIS OF TRICKLING FILTER-EXPERIMENTAL MODEL	Dr. V. C. Behn, Dept. of Sanitary Eng. Cornell University, Ithaca, New York

Keshavan, K., Behn, V. C. and Ames, W. F. "Kinetics of Aerobic Removal of Organic Wastes." J. San Eng. Div., Proc. ASCE, Vol. 90 SA1, Feb. 1964.

Behn, V. C., Ames, W. F. and Keshavan, K. Discussion of "Trickling Filter Design and Performance." J. San. Eng. Div., Proc. ASCE, Vol. 88, SA1, Jan. 1962.

Ames, W. F., Behn, V. C. and Collings, W. Z. "Transient Operation of the Trickling Filter." J. San. Eng. Div., Proc. ASCE, Vol. 88, SA3, May 1962.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION

WP-00235 DETERMINATION OF AMMONIA — Dr. Jack L. Lambert, Dept. of Chemistry, Kansas State University, Manhattan, Kansas

Zitomer, F. and Lambert, J. L. "Spectrophotometric Determination of Ammonia as Trichloramine." Anal. Chem., Vol. 34, 1739, 1962.

Lambert, J. L. and Zitomer, F. "Simplified Preparation of Cadmium Iodide -- Linear Starch Reagent for Colorimetric Iodimetry." Anal. Chem., Vol. 35, 405, 1963.

Zitomer, F. and Lambert, J. L. "Spectrophotometric Determination of Bromide Ion in Water." Anal. Chem., Vol. 35, 1731, 1963.

Zitomer, F. "Analytical Applications of the Trichloramine Reaction." Ph.D. Dissertation, Kans. State U., 1963.

WP-00237 TREATABILITY OF POTATO PROCESSING WASTES — Dr. A. M. Cooley, Dept. of Chemical Eng. Univ. of North Dakota, Grand Forks, N. D.

Fossum, G. O., Cooley, A. M. and Wahl, E. D. "Stabilization Ponds Receiving Potato Wastes with Domestic Sewage." Proc. 19th Ann. Purdue Industrial Waste Conf., May 5-7, 1964.

Wahl, E. D., Cooley, A. M. and Fossum, G. O. "Digestion of Potato Waste Substances -- Laboratory Conditions." Proc. 19th Ann. Purdue Industrial Waste Conf., May 5-7, 1964.

Cooley, A. M., Wahl, E. D. and Fossum, G. O. "Characteristics and Amounts of Potato Wastes from Various Process Streams." Proc. 19th Ann. Purdue Industrial Waste Conf., May 5-7, 1964.

WP-00239 THE BIOLOGY AND CHEMISTRY OF SPHAEROTILUS — Dr. J. L. Stokes, Dept. of Bact. & Pub. Health Washington State Univ., Pullman, Washington

Rouf, M. A. and Stokes, J. L. "Isolation and Identification of the Sudanophilic Granules of Sphaerotilus natans." J. Bact., 83:343-347, 1962.

Rouf, M. A. and Stokes, J. L. "Morphology, Nutrition and Physiology of Sphaerotilus discophorus." Arch. fur Mikrobiol., 49:132-149, 1964.

Rouf, M. A. and Stokes, J. L. "Isolation and Properties of Sphaerotilus discophorus." Bact., Proc. p. 41, 1962.

WP-00240 CATIONIC POLYMERS AS FLOCCULENT AIDS IN WATER — Dr. Henry B. Linford, Dept. of Chem. Eng. Columbia University, New York, N. Y.

Kane, J. C., La Mer, V. K. and Linford, H. B. "The Effect of Solid Content on the Adsorption and Flocculation Behavior of Silica Suspensions." J. Phys. Chem., Vol. 68, p. 3539, 1964.

Kane, J. C., La Mer, V. K. and Linford, H. B. "Filtration and Electrophoretic Mobility Studies of Flocculated Silica Suspensions." J. Am. Chem. Soc., Vol. 86, Sept. 5, 1964.

Kane, J. C., La Mer, V. K. and Linford, H. B. "The Filtration of Amorphous and Sized Crystalline Silica Suspensions Flocculated by High Polymers." J. Phys. Chem., Vol. 68, No. 8, Aug. 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00240 (cont.)	CATIONIC POLYMERS AS FLOCCULENT AIDS IN WATER	Dr. Henry B. Linford, Dept. of Chem. Eng. Columbia University, New York, N. Y.

Kane, J. C., La Mer, V. K. and Linford, H. B. "The Filtration of Silica Dispersions Flocculated by High Polymers." J. Phys. Chem., Vol. 67, No. 10, Oct. 1963.

Healy, T. W. and La Mer, V. K. "The Energetics of Flocculation and Redispersion by Polymers." J. Colloid Sci., Vol. 19, No. 4, April 1964.

WP-00246	INVESTIGATION OF INFILTRATION PHENOMENA	Dr. Joseph E. Franzini, Dept. of Civil Eng. Stanford University Stanford, California

Wang, F. C. "An Approach to the Solution of Unsteady, Unsaturated Flow Problems in Soils." Stanford U., Civil Eng. Dept. Tech. Report No. 19, March 1963.

Wang, F. C., Hassan, N. A. and Franzini, J. B. "A Method of Analyzing Unsteady, Unsaturated Flow in Soils." J. of Geophys. Res., Vol. 69, No. 12, June 1964.

Hassan, N. A. "Laminar Flow of Thin Liquid Films Around Solid Bodies of Various Shapes." Stanford U., Civil Eng. Dept. Tech. Report No. 24, May 1963.

Franzini, J. B. and Hassan, N. A. "Hydraulics of Thin Film Flow." J. of Hydr. Div., Proc. ASCE, Vol. 90, HY2, March 1964.

Hassan, N. A. and Franzini, J. B. "Film Flow Along a Vertical Cylinder." J. of Eng. Mech., Proc. ASCE, Vol. 90, EM4, Aug. 1964.

Adrian, D. D. "The Influence of Capillarity on the Flow of Air and Water in a Porous Medium." Stanford U., Civil Eng. Dept. Tech. Paper No. 38, June 1964.

WP-00247	AMINO ACID UTILIZATION IN ACTIVATED SLUDGE	Dr. Dale A. Carlson, Dept. of Civil Eng. University of Washington, Seattle, Wash.

Carlson, D. A. and Polkowski, L. B. "Amino Acid Utilization by Activated Sludge." J. Water Pollution Control Fed., Vol. 34, No. 8, Aug. 1962.

Carlson, D. A. and Bower, C. W. "Graphical Presentation of Protein Fraction Utilization Data by Computer System Analysis." Proc. 18th Ann. Purdue Industrial Waste Conf., May 1963.

WP-00286	BUBBLE MOTION AND MASS TRANSFER IN NON-NEWTONIAN FLUIDS	Dr. Arthur Humphrey, Dept. of Chem. Eng. University of Pennsylvania, Philadelphia, Pa.

Barnett, S. M. "Bubble Motion and Mass Transfer in Non-Newtonian Fluids." Ph.D. Thesis, U. of Penn. 1963.

Barnett, S. M., Humphrey, A. E. and Litt, M. "Bubble Motion and Mass Transfer in Non-Newtonian Fluids - Part I and Part II." Pres. at 52nd Natl. Meet. of AIChE. Memphis, Tenn., Feb. 2-5, 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00297	DETECTION OF LIMITING OR SURPLUS NUTRIENTS IN ALGAE	Dr. George P. Fitzgerald, Hydraul. & San. Lab. University of Wisconsin, Madison, Wisconsin
	Fitzgerald, G. P. "Factors Affecting the Toxicity of Copper to Algae and Fish." ACS Nat. Meet. N. Y., Sept. 8-13, 1963.	
	Fitzgerald, G. P. and Faust, S. L. "Factors Affecting the Algicidal and Algistatic Properties of Copper." Appl. Microbiol., Vol. 11, No. 4, July 1963.	
	Fitzgerald, G. P. and Faust, S. L. "Bioassay for Algicidal vs. Algistatic Chemicals." Water and Sewage Works, Aug. 1963.	
WP-00305	U.S.S.R. LITERATURE ON WATER SUPPLY AND POLLUTION CONTROL	Dr. Benjamin S. Levine, Individual District of Columbia
	"U.S.S.R. Literature on Water Supply and Pollution Control." Vol. 1, 61-31601, Oct. 30, 1962.	
	"U.S.S.R. Literature on Water Supply and Pollution Control." Vol. 2, 61-31601-2, Aug. 15, 1962.	
	"U.S.S.R. Literature on Water Supply and Pollution Control." Vol. 3, 61-31601-3, Feb. 28, 1963.	
	"U.S.S.R. Literature on Water Supply and Pollution Control." Vol. 4, 61-31601-4, Oct. 20, 1963.	
	"U.S.S.R. Literature on Water Supply and Pollution Control." Vol. 5, TT 61-31601-5, April 15, 1964.	
WP-00311	A COHERENT-AREA STUDY OF SOUTHERN LAKE MICHIGAN	Dr. John C. Ayers, Great Lakes Res. Div. University of Michigan, Ann Arbor, Michigan
	French, W. E. "A Correlation of the Currents and Sedimentary Activity in the Manitou Passage Area of Lake Michigan." GLRD Pub. No. 11, U. of Mich., 1964.	
WP-00316	BIOCHEMICAL UTILIZATION OF CHEMICALLY COMBINED OXYGEN	Dr. Edward H. Bryan, Dept. of Civil Eng. Duke Univ., Durham, North Carolina
	Bryan, E. H. "Combined Oxygen Sources for Measurement of the Strength of Wastes." Pres. at 1964 Ann. Meet. of N. C. Section, AWWA and the N. C. WPCA, Nov. 1964.	
	Bryan, E. H. and Harris, R. H. "The Effect of Incubation Temperature on the Exertion of Biochemical Demand for Chlorate Oxygen." Pres. at W. Va. WPCA Meet., March 1963.	
WP-00323	ROLE OF RIPPLES AND MOLECULAR FILMS ON MASS TRANSFER	Dr. J. M. Marchello, Dept. of Chemical Eng. University of Maryland, College Park, Md.
	Muenz, K. and Marchello, J. M. "Technique for Measuring Amplitudes of Small Surface Waves." Rev. of Scientific Instruments, Vol. 35, No. 8, Aug. 1964.	

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00325	KINETICS AND MECHANISM IN ACTIVATED SLUDGE PROCESSES	Dr. A. F. Gaudy, Dept. of Civil Engineering, Oklahoma State Univ., Stillwater, Oklahoma

Gaudy, A. F. Jr., Gaudy, E. T. and Komolrit, K. "Multicomponent Substrate Utilization in Natural Populations and a Pure Culture of Escherichia coli." Appl. Microbiol., Vol. 11, No. 2, Mar. 1963.

Gaudy, A. F. Jr. "Biochemical Response of Mixed Mass Culture to Changes in the Environment." Res. Seminar, Rice U., Houston, Tex., Feb. 1963.

Gaudy, A. F. Jr., Abu-Niaaj, F. and Gaudy, E. T. "A Statistical Study of the Spot Plate Technique for Viable Cell Counts." Appl. Microbiol., Vol.11, No. 4, July 1963.

Gaudy, A. F. Jr., Komolrit, K. and Bhatla, M. N. "Sequential Substrate Removal in Heterogeneous Populations." J. Water Pollution Control Fed., Vol.35, No. 7, July 1963.

Follett, R. H. and Gaudy, A. F. Jr. "Studies on the Occurrence of the Plateau in BOD Exertion. III. Simple and Complex Wastes with Various Seed and Substrate Concentrations." Proc. 14th Okla. Industrial Waste Conf., Nov. 1963.

Gaudy, A. F. Jr. and Ramanathan, M. "A Colorimetric Method for Determining Chemical Oxygen Demand." Proc. Tex. WPCA Industrial Waste Conf., June 1963.

Gaudy, A. F. Jr., Bhatla, M. N. and Gaudy, E. T. "Use of Chemical Oxygen Demand Values of Bacterial Cells in Waste Water Purification." Appl. Microbiol., Vol. 12, No. 3, May 1964.

Bhatla, M. N. and Gaudy, A. F. Jr. "Studies on the Causation of Phasic Oxygen Uptake in High Energy Systems." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

WP-00327	BACTERIA UTILIZING SURFACTANTS AS SOLE CARBON SOURCE	Dr. Dean A. Anderson, Dept. of Microbiol. & Pub. Health, Calif. State Coll., Los Angeles

Anderson, D. A. "Bacteria Utilizing Alkylbenzene Sulfonate as a Sole Carbon Source." Bacteriol. Proc., p. 7, 1964. (abst.)

Anderson, D. A. "Growth Responses of Certain Bacteria to ABS and Other Surfactants." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

WP-00328	TURBULENT DIFFUSION AND RIVER WASTE ASSIMILATIVE CAPACITY	Dr. Peter A. Krenkel, Dept. of Civil Eng., Vanderbilt University, Nashville, Tennessee

Krenkel, P. A. "Waste Dispersion Characteristics of Streams Using Turbulent Diffusion Phenomenon." J. Water Pollution Control Fed., Vol. 34, No. 12, Dec. 1962.

Krenkel, P. A. and Williams, H. E. "Prediction of Stream Reaeration Rates." Discussion of Paper by M. A. Churchill. J. San. Eng. Div., Proc. ASCE, Vol.89, April 1963.

Hays, J. R., Schnelle, K. B. and Krenkel, P. A. "Application of Frequency Response Techniques to the Analysis of Turbulent Diffusion Phenomenon." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

Krenkel, P. A. "The Significance of Longitudinal Mixing in the Analysis of Estuaries." Discussion of Paper by D. R. F. Harleman. Proc. 2nd Int'l. Conf. on Water Pollution Research, Tokyo, Aug. 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00328 (cont.)	TURBULENT DIFFUSION AND RIVER WASTE ASSIMILATIVE CAPACITY	Dr. Peter A. Krenkel, Dept. of Civil Eng. Vanderbilt University, Nashville, Tennessee

Krenkel, P. A. "Turbulent Diffusion and River Waste Assimilative Capacity." Tech. Report No. 3, San. and Water Resources Eng., Vanderbilt U., May 1964.

Krenkel, P. A. and Driver, E. E. "Stratified Flow-Cause and Effects." Proc. 15th Okla. Industrial Waste Conf., Nov. 1964.

WP-00334	PRODUCTION OF TASTE AND ODOR PRODUCING ALGAE IN RESERVOIRS	Dr. A. R. Gaufin, Div. of Biological Sci., University of Utah, Salt Lake City, Utah

Gaufin, A. R. "Taste and Odor Production in Reservoirs by Blue-Green Algae." JAWWA, Vol 56, No. 10, Oct. 1964.

Rabe, F. W. and Gaufin, A. R. "Some Limnological Effects of Fertilizing Three Cirque Lakes in the Uintah Mountains." Proc. Utah Acad. Sci., Arts, & Letters, Vol. 41, Part 2, 1964.

WP-00339	A CRITICAL STUDY OF ANALYTICAL METHODS FOR SEA WATER	Dr. Gail P. Edwards, Dept. of Civil Eng. New York University, New York, N. Y.

Edwards, G. P., Pfafflin, J. R., Schwartz, L. H. and Lauren, P. H. "Determination of Nitrates in Wastewater Effluents and Water." J. Water Pollution Control Fed., Vol. 34, No. 11, Nov. 1962.

WP-00340	STUDY OF THE SULFIDE -TO-SULFATE REACTION MECHANISM	Dr. Edwin E. Smith, Dept. of Chemical Eng. Ohio State University, Columbus, Ohio

Ehlers, E. G. and Birle, J. D. "Electropolishing of Pyrite." Amer. Mineralogist, Vol. 49, May-June 1964.

Birle, J. D. "Sulfide to Sulfate Reaction Mechanism in Pyritic Materials." M.S. Thesis, Ohio State U., 1963.

WP-00346	CHEMICAL OXIDATION OF TRACE ORGANICS IN WATER	Dr. Rolf D. Skrinde, Dept. Env. & San. Eng. Washington University, St. Louis, Missouri

Evans, F. L. III and Ryckman, D. W. "Ozonated Treatment of Wastes Containing ABS." Proc. 18th Ann. Purdue Industrial Waste Conf., May 1963.

Spicher, R. G. and Skrinde, R. T. "Potassium Permanganate Oxidation of Organic Contaminants in Water Supplies." JAWWA, Vol.55, No. 9, Sept. 1963.

Barttelbort, R. A., Dougherty, J. H. and Skrinde, R. T. "Chemical Oxidation of Organic Refractories." Pres. at Ann. Meet. Mo. Water Pollution Control Assn., K.C., Mo., May 1964.

Spicher, R. G. and Skrinde, R. T. "Potassium Permanganate Effects on Selected Organic Compounds in Water." Pres. at 147th Nat. Meet. ACS, Phila. Pa. April 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00347	WASTE WATER RECHARGE AND DISPERSION IN POROUS MEDIA	Dr. D. R. F. Harleman, Dept. of Civil Eng. Mass. Inst. of Tech., Cambridge Mass.
	"Dispersion in Unsteady Porous-Media Flow." J. Hydr. Div., Proc. ASCE, Vol. 88, HY6, Nov. 1962.	
WP-00352	ARRANGEMENTS FOR WATER SOURCES IN SELECTED NORTH CAROLINA AREAS	Warren J. Wicker, Institute of Government, Univ. of North Carolina, Chapel Hill, N. C.
	Heath, M. S. Jr. "Arrangements for Sources of Water: Introduction." U.N.C. Water Resource Paper No. 1, pub. by Inst. of Govt. and Dept. of Env. Sci. and Eng., 1963.	
	Heath, M. S. Jr. and Martin, J. E. "Survey of Irrigation in Selected North Carolina Counties, 1962." U.N.C. Water Resource Paper No. 2.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Almance County, North Carolina." U.N.C. Water Resource Paper No. 3, 1963.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Davidson County, North Carolina." U.N.C. Water Resource Paper No. 4, 1963.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Forsyth County, North Carolina." U.N.C. Water Resource Paper No. 5, 1963.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Guilford County, North Carolina." U.N.C. Water Resource Paper No. 6, 1963.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Rockingham County, North Carolina." U.N.C. Water Resource Paper No. 7, 1963.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Warren County, North Carolina." U.N.C. Water Resource Paper No. 8, 1963.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Pender and New Hanover Counties, North Carolina." U.N.C. Water Resource Paper No. 9, 1963.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Buncombe County, North Carolina." U.N.C. Water Resource Paper No. 10, 1963.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Henderson County, North Carolina." U.N.C. Water Resource Paper No. 11, 1963.	
	Martin, J. E. and Heath, M. S. Jr. "Irrigation Arrangements in Transylvania County, North Carolina." U.N.C. Water Resource Paper No. 12, 1963.	
	Walker, W. R. "Industrial Water Use in North Carolina." U.N.C. Water Resource Paper No. 13, 1964.	
WP-00365	DETERMINATION OF PHENOLS IN WATER AND WASTEWATER	Dr. Samuel D. Faust, Dept. of Env. Science, Rutgers The State Univ., New Brunswick, N.J.
	Faust, S. D. and Lorentz, F. C. "Factors Influencing the Condensation of 4-Amino Antipyrine with Phenols." Proc. 11th Ontario Industrial Waste Conf., 1964.	

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00378	EFFECT OF SURFACE WATER ACTINOMYCETES ON BOD VS COD	Dr. Robert L. Morris, State Hygienic Lab. State Univ. of Iowa, Iowa City, Iowa
	Morris, R. L., Dougherty, J. and Ronald, G. W. "Chemical Aspects of Actinomycete Metabolites as Contributors of Taste and Odor." JAWWA, Vol. 55, No. 10, Oct. 1963.	
	Morris, R. L. "Actinomycetes Studied as Taste and Oder Cause." Water and Sewage Works, Feb. 1962.	
WP-00379	RECOVERY FROM ACID POLLUTION IN FOUR STRIP-MINE LAKES	Dr. R. S. Campbell, Dept. of Zoology, University of Missouri, Columbia, Missouri
	Campbell, R. S., Lind, O. T., Geiling, W. T. and Harp, G. L. "Recovery from Acid Pollution in Shallow Strip-mine Lakes in Misscuri." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.	
WP-00382	THE ROLE OF ZETA POTENTIAL IN SAND FILTRATION	Dr. Charles R. O'Melia, Div. of Eng. & Appl. Physics, Harvard U., Cambridge, Mass.
	O'Melia, C. R. and Crapps, D. K. "Some Chemical Aspects of Rapid Sand Filtration." JAWWA, Vol. 56, No. 10, Oct. 1964.	
WP-00389	FROZEN STORAGE AND EFFECTS ON BOD TEST RESULTS	Dr. William J. Fogarty, Dept. of Civil Eng. Univ. of Miami, Coral Gables, Florida
	Fogarty, W. J. and Reeder, M. E. "B.O.D. Data Retrieval through Frozen Storage." Public Works, Vol. 95, No. 3, March 1964.	
	Reeder, M. E. and Fogarty, W. J. "Water and Sewage Flow Rates in Public Schools." Public Works, Vol. 95, No. 11, Nov. 1964.	
WP-00394	CONTROLLING FACTORS IN METHANE FERMENTATION	Dr. Richard E. Speece, Dept. of Civil Eng. Univ. of Illinois, Urbana, Illinois
	Speece, R. E. and Engelbrecht, R. S. "The Effect of Frequent Temperature Variations on Methane Production." Proc. 37th Ann. Meet. Central States Water Pollution Control Fed., Urbana, Ill., June 1964.	
WP-00396	APPLICATION OF FOAM FRACTIONATION TO SEWAGE	Percy H. McGauhey, Dept. of Civil Eng. University of California, Berkeley, Calif.
	McGauhey, P. H. and Stephenson, M. E. "Foam Fractionation of Waste Water." Proc. ACS Waste Water Renov. Symp., Div. of Water and Waste Chem., Cincinnati, Jan. 1963.	
WP-00412	THE FOAM FRACTIONATION OF PETROCHEMICAL WASTE WATERS	Dr. Robert B. Grieves, Dept. of Civil Eng. Northwestern Univ., Evanston, Illinois
	Grieves, R. B. and Wood, R. K. "Continuous Accumulation in Foam for the Treatment of Refining and Petrochemical Wastes." Chem. in Canada, Vol. 15, May 1963.	
	Grieves, R. B. and Wood, R. K. "Effect of the Foam-Liquid Solution Interface on Continuous Foam Separation." Nature, Vol. 200, No. 4904, Oct. 26, 1963.	
	Grieves, R. B., Kelman, S., Obermann, W. R. and Wood, R. K. "Exploratory Studies on Batch and Continuous Foam Separation." Can. J. of Chem. Eng., Vol. 41, 252, Dec. 1963.	

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00412 (cont.)	THE FOAM FRACTIONATION OF PETROCHEMICAL WASTE WATERS	Dr. Robert B. Grieves, Dept. of Civil Eng. Northwestern Univ., Evanston, Illinois
	Grieves, R. B. and Wood, R. K. "Continuous Foam Fractionation: the Effect of Operating Variables on Separation." AIChE Jour., Vol. 10, 456, 1964.	
WP-00422	DYNAMICS OF THE NITROGEN CYCLE IN LAKES	Dr. Richard C. Dugdale, Inst. of Marine Sci., Univ. of Alaska, College, Alaska
	Neess, J. C., Dugdale, R. C., Dugdale, V. A. and Goering, J. J. "Nitrogen Metabolism in Lakes I. Measurement of Nitrogen Fixation with N^{15}." Limnol. and Ocean., Vol. 7, No. 2, April 1962.	
	Dugdale, V. A. and Dugdale, R. C. "Nitrogen Metabolism in Lakes II. Role of Nitrogen Fixation in Sanctuary Lake, Pennsylvania." Limnol. and Ocean., Vol. 7, No. 2, April 1962.	
WP-00424	SEWAGE EFFLUENT PURIFICATION BY INTERFACE PHENOMENA	Dr. Harold L. Lovell, Dept. of Mineral Prep., Pennsylvania State Univ., University Park
	Lovell, H. L. "The Application of Mineral Preparation Concepts in Water Beneficiation." Mineral Industries, Vol. 34, No. 2, Nov. 1964.	
WP-00428	DYNAMICS OF DENSITY-STRATIFIED RESERVOIRS	Dr. Norman H. Brooks, Div. of Eng. & Appl. Sci., Calif. Inst. of Tech., Pasadena
	Koh, C. Y. "Viscous Stratified Flow Towards a Line Sink." Keck Lab. of Hydraul. and Water Resources, Rep. No. KH-R-6, Calif. Inst. of Tech., Jan. 1964.	
	Brooks, N. "Hidden Flow Patterns in Reservoirs." Eng. and Science, Calif. Inst. of Tech., Vol. 27, No. 7, April 1964.	
	Kao, T. W. "Stability of Two-Layer Stratified Flow Down an Inclined Plane." Keck Lab. Hydraul. and Water Resources, Rep. No. KH-R-8, Calif. Inst. of Tech., Aug. 1964.	
WP-00433	DETECTION AND REMOVAL OF ORGANIC PESTICIDES IN WATER	Dr. Rolf T. Skrinde, Dept. of Env. & San. Eng. Washington University, St. Louis, Missouri
	Dougherty, J. H., Buescher, C. A. Jr. and Skrinde, R. T. "Application of Electron Affinity Analyses to Oxidation of Pesticides in Water." Proc. 19th Ann. Purdue Industrial Waste Conf., May 5-7, 1964.	
	Buescher, C. A., Dougherty, J. H. and Skrinde, R. T. "Chemical Oxidation of Selected Organic Pesticides." J. Water Pollution Control Fed., Vol. 36, No. 8, Aug. 1964.	
	Skrinde, R. T., Caskey, J. W. and Gillespie, C. K. "Detection and Quantitative Estimation of Synthetic Organic Pesticides by Chromatography." JAWWA, Vol. 54, No. 11, Nov. 1962.	
	Skrinde, R. T. and Tomlinson, H. D. "Organic Micropollution Instrumentation and Measurement." J. Water Pollution Control Fed., Vol. 35, No. 10, Oct. 1963.	

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00443	STUDY OF BEGGIATOA SPECIES	Dr. Richard Y. Morita, Dept. of Microbiol., Oregon State Univ., Corvallis, Oregon

Morita, R. Y. "Growth Characteristics of Beggiatoa." Bact. Proc., 1964. (abstr.)

Morita, R. Y. and Stave, P. W. "Electron Micrograph of Ultrathin Section of Beggiatoa." J. Bact., Vol. 85, No. 4, April 1963.

Burton, S. D. and Morita, R. Y. "Effect of Catalase and Cultural Conditions on Growth of Beggiatoa." J. Bact., Vol. 88, No. 6, Dec. 1964.

WP-00457	STATISTICAL THEORY OF EXTREME VALUES AND THEIR APPLICATIONS IN HYDROLOGY	Dr. Emil J. Gumbel, Dept. of Industrial & Mange. Eng., Columbia Univ., New York, N.Y.

Gumbel, E. J. "Statistical Forecast of Droughts." Bull. Int'l. Assn. Sci. Hydrol. 8:5, March 1963.

"Contributions to the Discussions of the International Statistical Institute, Paris Congress, 1961." Bull. de l'Inst. Int. de Statistique, Vol. 39, Part 1.

Japanese translation of Statistics of Extremes, ed. by Prof. S. Iwai, T. Kawata, and S. Kase, Hirokawa Publ. Co., Tokyo, 1963.

Davenport, R. W., Beard, L. R. and Gumbel, E. J. "Discussion of M. A. Benson's article, Plotting Positions and Economics of Engineering Planning." J. Hydr. Div., Proc. ASCE, Vol. 89, No. HY3, Part 1, May 1963.

Gumbel, E. J. "The Theory of Extremes." DISCOVERY (London), Vol. 30, No. 5, May 1964.

Gumbel, E. J. "Technische Anwendungen der Statistischen Theorie Der Extremwerte." Schweizer Archiv fuer angewandte Wiss. U. Technik, Vol. 30, No. 2, Feb. 1964.

Gumbel, E. J. and Goldstein, N. "Analysis of Empirical Bivariate Extremal Distributions." J. Amer. Stat. Assn., Vol. 59, No. 3, Sept. 1964.

WP-00477	CHEMICAL BRUSH CONTROL: BIOCHEMISTRY AND TOXIC HAZARD	Dr. Virgil H. Freed, Dept. of Agric. Chem., Oregon State Univ., Corvallis, Oregon

"Effects of Formulation and Molecular Configuration on Absorption and Translocation of Some Phenoxy Herbicides in Bigleaf Maple Seedlings." Proc. Res. Comm., Western Weed Control Conf., Salt Lake City, March 1964.

"The Metabolism of Some Phenoxy Herbicides in Bigleaf Maple." Proc. Res. Comm., Western Weed Control Conf., Salt Lake City, March 1964.

"The Absorption, Translocation, and Metabolism of 2, 4-DB in Bigleaf Maple Seedlings." Proc. Res. Comm., Western Weed Control Conf., Salt Lake City, March 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00482	ION EFFECTS IN ANAEROBIC DIGESTION	Dr. Perry L. McCarty, Dept. of Civil Eng. Stanford Univ., Stanford, California

McCarty, P. L. and Brosseau, M. H. "Effect of High Concentrations of Individual Volatile Acids on Anaerobic Treatment." Proc. 18th Ann. Purdue Industrial Waste Conf., May 1963.

McCarty, P. L. "The Methane Fermentation." Chap. 16, Principles and Applications in Aquatic Microbiology, ed. H. Heukelekian and N. C. Dondero, John Wiley, N. Y., 1964.

Lawrence, A. W., McCarty, P. L. and Guerin, F. J. "The Effects of Sulfide on Anaerobic Treatment." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

Kugelman, I. J. and McCarty, P. L. "Ion Toxicity and Stimulation in Anaerobic Waste Treatment. II. Continuous Feed Studies." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

WP-00483	NUTRIENT REQUIREMENTS IN ANAEROBIC DIGESTION	Dr. Perry L. McCarty, Dept. of Civil Eng. Stanford Univ., Stanford, California

Speece, R. E. and McCarty, P. L. "Nutrient Requirements and Biological Solids Accumulation in Anaerobic Digestion." Int. Conf. on Water Pollution Research, London, 1962.

McCarty, P. L. "The Methane Fermentation." Chap. 16, Principles and Applications in Aquatic Microbiology, ed. H. Heukelekian and N. C. Dondero, John Wiley, N. Y., 1964.

"Thermodynamics of Biological Synthesis and Growth." Proc. of 2nd Int'l. Conf. on Water Pollution Research, Tokyo, Aug. 1964.

WP-00508	NEMATODES IN SEWAGE TREATMENT AND THEIR SIGNIFICANCE	Wilson T. Calaway, Dept. of Entomology, University of Florida, Gainesville, Fla.

Calaway, W. T. "Nematodes in Wastewater Treatment." J. Water Pollution Control Fed., Vol. 35, No. 8, Aug. 1963.

Russell, C. C. "A Rearing Medium for Microphagus Nematodes." Florida Entomologist, Vol. 47, No. 4, Dec. 1964.

WP-00516	ISOLATION OF WATER-BORNE BACTERIOPHAGES BY ELECTROPHORESIS	Dr. Milan Bier, Dept. of Agric. Biochemistry, University of Arizona, Tucson, Arizona

"Forced Flow Electrophoresis - Instrumentation and Results." Fed. Proc. 22, (No. 2), 1963.

Cooper, F. C. "Water Purification by Forced-Flow Electrophoresis." Ph.D. Thesis, Dept. of Civil Eng., U. of Arizona, 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00548	PHYSIOLOGY AND CULTURE OF IRON-OXIDIZING BACTERIA	Dr. D. G. Lundgren, Dept. of Bact. & Botany, Syracuse Univ. Research Inst., Syracuse, N.Y.

Dugan, P. and Lundgren, D. G. "Microdetection of Menadione, Coenzyme Q_6, and Certain Related Quinoid Compounds in Biological Materials Using Electron Capture-Gas Chromatography." Anal. Biochem., Vol. 8, No. 3, July 1964.

Dugan, P. and Lundgren, D. G. "Acid Production by Ferobacillus ferrooxidans and its Relation to Water Pollution." Developments in Industrial Microbiology, Vol. 5, 1964.

Lundgren, D. G., Andersen, K. J., Remsen, C. C. and Mahoney, R. P. "Culture, Structure, and Physiology of the Chemoautotroph Ferrobacillus ferrooxidans." Developments in Industrial Microbiology, Vol. 6, Chap. 27, 1964.

WP-00558	THE NATURE OF ORGANIC COLOR IN WATER	Dr. Russell F. Christman, Dept. of Civil Eng. University of Washington, Seattle, Wash.

Christman, R. F. "The Chemistry of Color in Water." Trend in Engineering a U. of Washington, Vol. 16, No. 4, October 1964.

WP-00563	DIRECT GAS CHROMATOGRAPHY OF ORGANICS IN WATER	Dr. Charles M. Weiss, Dept. of Env. Sci., & Eng., Univ. of North Carolina, Chapel Hill

"An Organic Constituent of Natural Waters." ESE Notes, Dept. Env. Sci. & Eng., U. of No. Carolina, No. 1, Jan. 1964.

Weiss, C. M., Johnson, J. D. and Kwon, B. "Direct Determination of Organic Constituents of Natural Waters by Flame Ionization Gas Chromatography." JAWWA, Vol. 55, No. 10, Oct. 1963.

WP-00566	DISSOLVED OXYGEN DETERMINATION IN NATURAL AND WASTEWATER	Dr. Khalil H. Mancy, Dept. of Civil Eng. University of Cincinnati, Cincinnati, Ohio

Mancy, K. H. and Haskins, E. "The Voltammetric Determination of Dissolved Oxygen in Natural and Waste Waters, I - The Salt Effect." Proc. 148th ACS Meeting, Chicago, 1964.

Haskins, E. "The Salting Out Effect on the Voltammetric Analysis of Dissolved Oxygen." M.S. Thesis, U. of Cincinnati, May 1964.

WP-00575	TRANSVERSE DISPERSION OF CONTAMINANT IN GROUND WATER	Dr. Wen-Hsiung Li, Dept. of Civil Eng. Syracuse University, Syracuse, New York

Li, W. "Band Diffusion with Variable Parameters Along Flow." J. Eng. Mech. Div., Proc. ASCE, Vol. 90, No. EM5, Oct. 1964.

WP-00636	EFFECT OF HERBICIDES ON AN AQUATIC ENVIRONMENT	Dr. Henry H. Funderburk, Dept. of Botany & Plant Path., Auburn U., Auburn, Alabama

Funderburk, H. H. Jr. and Lawrence, J. M. "Mode of Action and Metabolism of Diquat and Paraquat." Weeds, 12:259-264, 1964.

Coats, G. E., Funderburk, H. H. Jr., Lawrence, J. M. and Davis, D. E. "Persistence of Diquat and Paraquat in Pools and Ponds." Proc. So. Weed Conf., 17:308-320, 1964.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00636 (cont.)	EFFECT OF HERBICIDES ON AN AQUATIC ENVIRONMENT	Dr. Henry H. Funderburk, Dept. of Botany & Plant Path., Auburn U., Auburn, Alabama

Funderburk, H. H. Jr. and Lawrence, J. M. "Mode of Action and Degradation of Diquat and Paraquat." Weed Soc. of Amer. Abstracts, 88, 1964.

Pate, D. A., Funderburk, H. H. Jr., Lawrence, J. M. and Davis, D. E. "Tissue Destruction in the Nodes of Alligatorweed Following Treatment with Dichlobenil and Dicamba." Weed Soc. of Amer. Abstracts, 104, 1964.

Pate, D. A., Funderburk, H. H. Jr., Davis, D. E. and Lawrence, J. M. "Preliminary Studies on C^{14} Labeled Dichlobenil." Proc. So. Weed Conf., 17:337, 1964.

WP-00643	THE FOAM FRACTIONATION OF PETROCHEMICAL WASTE WATERS	Dr. Robert B. Grieves, Dept. of Civil Eng. Illinois Inst. of Tech., Chicago, Illinois

Grieves, R. B., Crandall, C. J. and Wood, R. K. "Foam Separation of ABS and Other Surfactants." Int'l. Jour. of Air and Water Pollution, Vol. 8, 501, 1964.

Grieves, R. B. and Bhattacharyya, D. "The Foam Separation Process: A Model for Waste Treatment Applications." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

WP-00645	ADAPTATION BY MICROBIAL POPULATIONS	Dr. Norman C. Dondero, Dept. of Env. Science, Rutgers The State Univ., New Brunswick, N.J.

Prakasam, T. B. S. and Dondero, N. C. "Observations on the Behavior of a Microbial Population Adapted to a Synthetic Waste." Proc. 19th Ann. Purdue Industrial Waste Conf., May 1964.

WP-00650	EFFECT OF ORGANIC SUBSTANCES FROM THE SEA ON BACTERIA	Dr. Galen E. Jones, Dept. of Biology, Boston University, Boston, Massachusetts

Jones, G. E. "Effect of Chelating and Autoclaving of Sea Water on the Growth of Escherichia coli." Bacteriol. Proc., 1962.

Jones, G. E. "The Importance of Amino Acids to the Development of Marine Bacteria." VIII Int'l. Congress for Microbiol., Montreal., p. 49, 1962.

Jones, G. E. "Suppression of Bacterial Growth by Sea Water." Symp. on Marine Microbiology. C. C. Thomas Pub. House, Springfield, Ill., 1963.

Jones, G. E. "Effect of Chelating Agents on the Growth of Escherichia coli in Seawater." J. Bact., Vol. 87, No. 3, March 1964.

WP-00651	CHEMICAL EXCHANGES ACROSS SEDIMENT-WATER INTERFACES	Dr. Bruce W. Nelson, Dept. of Geology, U. of South Carolina, Columbia, S. C.

Nelson, B. W. "Removal of Kraft Effluent from River Water by Suspended Sediment." Tappi, Vol. 46, No. 5, May 1963.

GRANT NO.	PROJECT TITLE AND PUBLICATIONS	PROJECT DIRECTOR AND LOCATION
WP-00676	OCCURRENCE OF PESTICIDES IN AQUATIC ENVIRONMENTS	Dr. Ervin Hindin, Div. of Industrial Res. Washington State Univ., Pullman, Washington

Hindin, E., May, D. S. and Dunstan, G. "Collection and Analysis of Synthetic Organic Pesticides from Surface and Ground Water." Residue Reviews, Vol. 7, Springer Verlag Co., New York, 1964.

WP-00767	MARSH PLANTS OF FLORIDA AREA AS RELATED TO WATER POLLUTION	Dr. R. K. Godfrey, Dept. of Biol. Sciences, Florida State Univ., Talahassee, Florida

"An Appraisal of Lespedeza hirta on the Atlantic Coastal Plain." Brittonia 16, (No. 1):74 Jan. 1964.

"Wahlenbergia linarioides (Campanulaceae) in Florida; A Second Adventive Species for the U. S." SIDA 1, 3, 1963.

Godfrey, R. K. and Adams, P. "The Identity of Sagittaria isoetiformis" (Alismataceae). SIDA 1, 5, 1964.

Mitchell, R. S. "Phytogeography and Floristic Survey of a Relic Area in the Marianna Lowlands, Florida." Amer. Midland Naturalist, Vol. 69, No. 2, April 1963.

Adams, P. "Studies in the Guttiferae. II. Taxonomic and Distributional Observations on North American Taxa." Rhodora, Vol. 64, No. 759, 1962.

Adams, P. "Studies in the Guttiferae. I. A synopsis of Hypericum Section Myriandra." Gray Herbarium of Harvard Univ., No. CLXXXIX, pp. 1-51.

Reinert, G. W. and Godfrey, R. K. "Reappraisal of Utricularia Intiata and U. radiata (Lentibulariaceae). Amer. Jour. of Botany, Vol. 49, No. 3, March 1962.

Lewis, W. H., Stripling, H. L. and Ross, R. G. "Chromosome Numbers for Some Angiosperms of the Southern United States and Mexico." Rhodora, Vol. 64, No. 758, 1962.

Henderson, N. C. "A Taxonomic Revision of the Genus Lycopus (Labiatae)." Am. Midland Naturalist, Vol. 68, No. 1, July 1962.

Kurtz, H. and Godfrey, R. K. "Trees of Northern Florida." Univ. of Florida Press, Gainesville, Fla., 1962.

INDEX TO PROJECT DIRECTORS

PROJECT DIRECTOR	GRANT NO.
Ames, William F.	WP-00213
Anderson, Dean A.	WP-00327
Ayers, John C.	WP-00226
	WP-00311
Bandy, Orville L.	WP-00158
Barlow, J. P.	WP-00176
Behn, V. C.	WP-00229
	WP-00234
Bier, Milan	WP-00516
Black, A. P.	WP-00139
Bonney, C. H.	WP-00039
Brehmer, Morris L.	WP-00092
Brooks, Norman H.	WP-00428
Bruun, Per	WP-00057
Bryan, Edward H.	WP-00316
Busch, A. W.	WP-00012
Calaway, Wilson T.	WP-00508
Campbell, R. S.	WP-00379
Carlson, Dale A.	WP-00247
Castle, E. N.	WP-00107
Charnes, Abraham	WP-00019
Christman, Russell F.	WP-00558
Clark, J. W.	WP-00143
Collins, R. P.	WP-00005
Cooley, A. M.	WP-00237
Cooper, Robert C.	WP-00231
Cowgill, David M.	WP-00029
Davidson, Floyd F.	WP-00002
Delaney, John E.	WP-00202
DeWitt, John W.	WP-00020
Dobbins, W. E.	WP-00008
Dodd, John D.	WP-00221
Dondero, Norman C.	WP-00212
	WP-00645
Dugdale, Richard C.	WP-00422
Dunlop, Stuart G.	WP-00119
Edwards, Gail P.	WP-00339
Engelbrecht, R. S.	WP-00017
	WP-00047
Ewing, Ben B.	WP-00018
Fair, Gordon M.	WP-00024
Faust, Samuel D.	WP-00206
	WP-00365
Feng, Tsuan Hua	WP-00208
Fish, C. J.	WP-00023
Fitzgerald, George P.	WP-00297
Fogarty, William J.	WP-00389
Franzini, Joseph B.	WP-00160
	WP-00246
Freed, Virgil H.	WP-00477
Fuhrman, Ralph E.	WP-00096
Funderburk, Henry H.	WP-00636
Gannon, John J.	WP-00187
Gaudy, A. F.	WP-00075
	WP-00325
Gaufin, Arden R.	WP-00003
	WP-00334
Gessel, Stanley P.	WP-00051
Geyer, John C.	WP-00153
Gloyna, Earnest F.	WP-00222
Godfrey, R. K.	WP-00767
Grieves, Robert B.	WP-00412
	WP-00643
Gumbel, Emil J.	WP-00457
Harleman, Donald R. F.	WP-00071
	WP-00220
	WP-00347
Heukelekian, H.	WP-00078
	WP-00133
	WP-00136
Hilsenhoff, William L.	WP-00209
Himmelblau, David M.	WP-00165
Hindin, Ervin	WP-00215
	WP-00676
Humphrey, Arthur	WP-00286
Ingols, Robert S.	WP-00188
Irwin, William H.	WP-00067

PROJECT DIRECTOR	GRANT NO.
Jeffrey, E. A.	WP-00032
Jones, Galen E.	WP-00077
	WP-00650
Johnson, Joe W.	WP-00156
Kirkham, Don	WP-00070
Krenkel, Peter A.	WP-00328
Lambert, Jack L.	WP-00235
Larson, T. E.	WP-00093
Lemlich, Robert	WP-00161
Levin, Gilbert V.	WP-00164
Levine, Benjamin S.	WP-00305
Li, Wen-Hsiung	WP-00575
Linford, Henry B.	WP-00240
Lovell, Harold L.	WP-00424
Lundgren, D. G.	WP-00548
McCarty, Perry L.	WP-00482
	WP-00483
McGauhey, Percy H.	WP-00396
Malina, Joseph F.	WP-00083
Mancy, Khalil H.	WP-00566
Marchello, J. M.	WP-00323
Marvell, Elliot N.	WP-00079
Morgan, Paul E.	WP-00196
Morita, Richard Y.	WP-00443
Morris, Robert L.	WP-00378
Morrison, S. M.	WP-00080
Murphy, Nelson F.	WP-00085
Nelson, Bruce W.	WP-00651
Nesbitt, John B.	WP-00151
O'Connor, Donald J.	WP-00142
Okun, Daniel A.	WP-00131
O'Melia, Charles R.	WP-00382
Oswald, William J.	WP-00026
Parker, Patrick L.	WP-00204
Pearson, Erman A.	WP-00230
Pipes, Wesley O.	WP-00219
Randles, Chester I.	WP-00147
Rees, Don M.	WP-00027
Shapiro, Joseph	WP-00199
Sieburth, J. McNeil	WP-00100
Skrinde, Rolf D.	WP-00346
	WP-00433
Slanetz, L. W.	WP-00009
Smith, Edwin E.	WP-00340
Smith, L. L. Jr.	WP-00223
Speece, Richard E.	WP-00394
Starkey, R. L.	WP-00006
Stokes, J. L.	WP-00239
Strandberg, Carl H.	WP-00181
Stumm, Werner	WP-00013
	WP-00043
	WP-00098
Suttkus, R. D.	WP-00082
Testerman, M. K.	WP-00044
Thomas, Harold A.	WP-00111
Tischer, Robert G.	WP-00193
Villemonte, James R.	WP-00183
Warren, C. E.	WP-00135
	WP-00157
Washington, Donald R.	WP-00228
Weiss, Charles M.	WP-00010
	WP-00563
Wicker, Warren J.	WP-00352
Wilson, H. A.	WP-00122
Wolfe, R. S.	WP-00016
Yount, James L.	WP-00216

INDEX TO AUTHORS

AUTHOR	GRANT NO.
Abu-Niaaj, F.	WP-00075
	WP-00325
Adams, P.	WP-00767
Adrian, D. D.	WP-00246
Agardy, F. J.	WP-00230
Aly, O. M.	WP-00206
Ames, W. F.	WP-00213
	WP-00234
Andersen, C. J.	WP-00548
Andersen, D. M.	WP-00027
Anderson, D. A.	WP-00327
Andrews, J. F.	WP-00230
Arnold, F. D.	WP-00027
Balci, A. N.	WP-00051
Bandy, O. L.	WP-00158
Barlow, J. P.	WP-00176
Barnes, J. M.	WP-00164
Barnett, S. M.	WP-00286
Bartley, C. H.	WP-00009
Barttelbort, R. A.	WP-00346
Battjes, J. A.	WP-00057
Baumann, E. R.	WP-00196
Bean, G. H.	WP-00005
Beard, L. R.	WP-00457
Behn, V. C.	WP-00213
	WP-00229
	WP-00234
Bellaire, F. R.	WP-00226
Bhatla, M. N.	WP-00075
	WP-00325
Bhattacharyya, D.	WP-00643
Bigley, N. J.	WP-00147
Birle, J. D.	WP-00340
Black, A. P.	WP-00139
Blackman, W. C. Jr.	WP-00032
Bogar, F. B.	WP-00164
Bonney, C. H.	WP-00039
Borchers, C. E.	WP-00044
Bower, C. W.	WP-00247
Boyle, O. W.	WP-00219
Brehmer, M. L.	WP-00092
Bronson, J. C.	WP-00026
Brooks, N.	WP-00428
Brosseau, M. H.	WP-00482
Brown, L. R.	WP-00193
Brunner, C. A.	WP-00161
Bruun, P. M.	WP-00057
Bryan, E. H.	WP-00316
Buescher, C. A.	WP-00433
Bunting, D. L. II	WP-00067
Burns, D. E.	WP-00196
Burton, S. D.	WP-00443
Busch, A. W.	WP-00012
Calaway, W. T.	WP-00508
Campbell, R. S.	WP-00379
Carbaugh, H. C.	WP-00153
Carlson, D. A.	WP-00247
Caskey, J. W.	WP-00433
Charnes, A.	WP-00019
Chaudhuri, N.	WP-00047
Christman, R. F.	WP-00139
	WP-00558
Clark, J. W.	WP-00143
Cleasby, J. L.	WP-00196
Clendenning, J. R.	WP-00164
Clough, S. B.	WP-00229
Coats, G. E.	WP-00636
Cole, D. W.	WP-00051
Cole, R. D.	WP-00230
Collett, G. C.	WP-00027
Collings, W. Z.	WP-00213
	WP-00234
Collins, R. P.	WP-00005
Conover, J. T.	WP-00023
	WP-00100
Cook, D. W.	WP-00193
Cooley, A. M.	WP-00237
Cooper, F. C.	WP-00516
Cooper, R. C.	WP-00026
	WP-00231
Copeland, B. J.	WP-00204
Cowgill, D. M.	WP-00029
Crandall, C. J.	WP-00643
Crapps, D. K.	WP-00382
Dahlberg, M L.	WP-00135
Davenport, R. W.	WP-00457
Davidson, F. F.	WP-00002

AUTHOR	GRANT NO.
Davis, D. E.	WP-00636
Davis, G. E.	WP-00135
	WP-00157
DeFilippi, J. A.	WP-00153
Deininger, R. A.	WP-00019
Delaney, J. E.	WP-00202
Dever, J. E. Jr.	WP-00157
Dillingham, J. H.	WP-00196
Dillon, W. P.	WP-00023
Dobbins, W. E.	WP-00008
Dodd, J. D.	WP-00221
Dodd, M. C.	WP-00147
Dondero, N. C.	WP-00078
	WP-00212
	WP-00645
Doudoroff, P.	WP-00135
	WP-00157
Dougherty, J.	WP-00378
Dougherty, J. H.	WP-00346
	WP-00433
Douglas, N. H.	WP-00067
Downs, T. D.	WP-00187
Driver, E. E.	WP-00328
Drum, R. W.	WP-00221
Duffer, W. R.	WP-00204
Dugan, P.	WP-00548
Dugdale, R. C.	WP-00422
Dugdale, V. A.	WP-00422
Dunlop, S. G.	WP-00119
Dunstan, G. H.	WP-00215
	WP-00676
Edwards, G. P.	WP-00339
Ehlers, E. G.	WP-00340
Eisen, R.	WP-00019
Englebrecht, R. S.	WP-00017
	WP-00047
	WP-00394
Evans, F. L. III	WP-00346
Fair, G. M.	WP-00024
Faust, S. D.	WP-00206
	WP-00365
Faust, S. L.	WP-00297
Feng, T. H.	WP-00208
Fiering, M. B.	WP-00111
Fingerman, S. W.	WP-00082
Fisher, R. J.	WP-00135
Fitzgerald, G. P.	WP-00297
Fogarty, W. J.	WP-00389
Follett, R. H.	WP-00325
Fossum, G. O.	WP-00237
Foster, J.	WP-00135
Franzini, J. B.	WP-00160
	WP-00246
French, W. E.	WP-00311
Frey, J. A.	WP-00100
Funderburk, H. H. Jr.	WP-00636
Gaines, H. D.	WP-00005
Gakstatter, J. H.	WP-00010
Galal-Gorchev, H.	WP-00013
Gannon, J. J.	WP-00187
Garner, W.	WP-00143
Gaudy, A. F. Jr.	WP-00075
	WP-00225
Gaudy, E. T.	WP-00016
	WP-00075
	WP-00325
Gaufin, A. R.	WP-00003
	WP-00334
Gee, H. K.	WP-00026
Geiling, W. T.	WP-00379
Gemmell, R. E.	WP-00019
Gemmell, R. S.	WP-00024
Genetelli, E. J.	WP-00133
Gessel, S. P.	WP-00051
Geyer, J. C.	WP-00153
Geyer, V. B.	WP-00147
Gibbs, R. K.	WP-00165
Gibor, A.	WP-00164
Gillespie, C. K.	WP-00433
Gloyna, E. F.	WP-00222
Goering, J. J.	WP-00422
Godfrey, R. K.	WP-00767
Goldstein, N.	WP-00457
Golueke, C. G.	WP-00026
Gould, W. R.	WP-00067
Grady, L. Jr.	WP-00012
Grasso, R. J.	WP-00202
Gregory, D. R.	WP-00085
Grieves, R. B.	WP-00219
	WP-00412
	WP-00643
Gruner, B. J.	WP-00093
Guerin, F. J.	WP-00482
Gumbel, E. J.	WP-00457
Harleman, D. R. F.	WP-00071
	WP-00220
Harp, G. L.	WP-00379
Harris, R. H.	WP-00316

AUTHOR	GRANT NO.
Hart, W. E.	WP-00156
Haskins, E.	WP-00566
Hassan, N. A.	WP-00246
Hatfield, W. D.	WP-00019
Hatten, M. J.	WP-00215
Hays, J. R.	WP-00328
Hazel, C. R.	WP-00020
Healy, T. W.	WP-00240
Heath, M. S. Jr.	WP-00352
Held, E. E.	WP-00051
Henderson, N. C.	WP-00767
Herrmann, R. B.	WP-00135
Hetling, L. J.	WP-00228
Heukelekian, H.	WP-00078
	WP-00133
	WP-00136
Hill, W. H.	WP-00151
Hilsenhoff, W. L.	WP-00209
Himmelblau, D. M.	WP-00165
Hindin, E.	WP-00215
	WP-00676
Hintz, H.	WP-00026
Hipke, J. L.	WP-00122
Hiser, L. L.	WP-00012
Holley, E. R. Jr.	WP-00071
Hufschmidt, M.	WP-00111
Hull, C. H. J.	WP-00153
Humphrey, A. E.	WP-00286
Hwu, C. K.	WP-00161
Ingle, J. C. Jr.	WP-00158
Ingols, R. S.	WP-00188
Irwin, W. H.	WP-00067
Ives, K. J.	WP-00098
Jeffrey, E. A.	WP-00032
Jeffries, H. P.	WP-00023
Jensen, L. D.	WP-00003
Johnson, J. D.	WP-00563
Jones, D. L.	WP-00226
Jones, G. E.	WP-00077
	WP-00650
Jones, T. C.	WP-00067
Kane, J. C.	WP-00240
Kao, T. W.	WP-00428
Kelman, S.	WP-00412
Keshavan, K.	WP-00213
	WP-00234
Kirkham, D.	WP-00070
Kobayashi, Y.	WP-00151
Koh, C. Y.	WP-00428
Komolrit, K.	WP-00075
	WP-00325
Kraft, G. F.	WP-00157
Kramer, R. H.	WP-00223
Krenkel, P. A.	WP-00328
Kugelman, I. J.	WP-00482
Kurtz, H.	WP-00767
Kwon, B.	WP-00563
Lackey, J. B.	WP-00023
La Frenz, R. L.	WP-00196
La Mer, V. K.	WP-00240
Lambert, J. L.	WP-00235
Larson, T. E.	WP-00093
Lashen, E.	WP-00006
Lauren, P. H.	WP-00339
Lavi, E.	WP-00161
Lawrence, A. W.	WP-00482
Lawrence, J. M.	WP-00636
Lazen, A. G.	WP-00147
Lee, G. F.	WP-00013
Leiby, P. D.	WP-00080
Lemlich, R.	WP-00161
Leonard, R. A.	WP-00161
Levin, G. V.	WP-00164
Levy, M. R.	WP-00161
Lewis, W. H.	WP-00767
Li, W.	WP-00575
Lind, O. T.	WP-00379
Linford, H. B.	WP-00240
Litt, M.	WP-00286
Lofton, C. C.	WP-00080
Logan, J. A.	WP-00019
Longley, J. M.	WP-00017
Lorentz, F. C.	WP-00365
Lorenzen, C. J.	WP-00176
Lovell, H. L.	WP-00424
Lundgren, D. G.	WP-00548
Lyle, W.	WP-00029
Lynn, W. R.	WP-00019
McCarthy, J. A.	WP-00202
McCarty, P. L.	WP-00482
	WP-00483
McDonald, R.	WP-00215
McGauhey, P. H.	WP-00396
McKeown, J. J.	WP-00131
McLain, D. R.	WP-00226
McWhorter, T. R.	WP-00136

AUTHOR	GRANT NO.
Mahoney, R. P.	WP-00548
Malina, J. F. Jr.	WP-00083
Mancy, K. H.	WP-00131
	WP-00566
Marchello, J. M.	WP-00323
Margrave, G. E.	WP-00017
Martin, E. J.	WP-00228
Martin, J. E.	WP-00352
Marvell, E. N.	WP-00079
Mason, J. C.	WP-00157
May, D. S.	WP-00215
	WP-00676
Melhorn, P. F.	WP-00220
Metcalf, T. G.	WP-00009
Metzner, A. B.	WP-00229
Meyers, J. H.	WP-00026
Miholits, E. M.	WP-00219
Milbury, W. F.	WP-00219
Miley, J. F.	WP-00196
Mitchell, R. S.	WP-00767
Morgan, J. J.	WP-00013
	WP-00098
Morgan, P. E.	WP-00196
Morita, R. Y.	WP-00443
Morris, R. L.	WP-00378
Morrison, S. M.	WP-00080
Muenz, K.	WP-00323
Munson, P.	WP-00119
Murphy, N. F.	WP-00085
Murphy, R. S.	WP-00151
Myren, R. T.	WP-00176
Nebeker, A. V.	WP-00003
Neess, J. C.	WP-00422
Nelson, B. W.	WP-00651
Nelson, T.	WP-00003
Nesbitt, J. B.	WP-00151
Obermann, W. R.	WP-00412
O'Brien, W. J.	WP-00143
O'Connor, D. J.	WP-00142
Oglesby, R. T.	WP-00010
Ohl, L.	WP-00221
Okrend, H.	WP-00212
Okun, D. A.	WP-00131
O'Melia, C. R.	WP-00382
Oswald, W. J.	WP-00026
Oulman, C. S.	WP-00196
Pankratz, H. S.	WP-00221
Pate, D. A.	WP-00636
Pearson, E. A.	WP-00230
Pfafflin, J. R.	WP-00339
Pipes, W. O.	WP-00219
Polkowski, L. B.	WP-00247
Powers, C. F.	WP-00226
Powers, W. L.	WP-00070
Prakasam, T. B. S.	WP-00645
Pratt, D. M.	WP-00100
Quon, J.	WP-00019
Rabe, F. W.	WP-00334
Raible, R. W.	WP-00044
Ramanathan, M.	WP-00075
	WP-00325
Randles, C. I.	WP-00147
Rao, S. S.	WP-00228
Rao, T. S.	WP-00012
Read, H. E.	WP-00229
Redell, D. L.	WP-00029
Reeder, M. E.	WP-00389
Rees, D. M.	WP-00027
Reilley, C. N.	WP-00131
Reinert, G. W.	WP-00767
Remsen, C. C.	WP-00548
Resig, J. M.	WP-00158
Ricketts, R. L.	WP-00032
Robinson, L. R.	WP-00017
Rogers, T. O.	WP-00122
Rohlich, G. A.	WP-00183
Romine, R. W.	WP-00044
Ronald, G. W.	WP-00378
Ross, R. G.	WP-00767
Rouf, M. A.	WP-00239
Rowan, W. H.	WP-00039
Rowland, W. F.	WP-00160
Rumer, R. R. Jr.	WP-00220
Russell, C. C.	WP-00508
Russell, G. S.	WP-00019
Ryckman, D. W.	WP-00346
Samworth, R. B.	WP-00153
Schneider, C. R.	WP-00043
Schnelle, K. B.	WP-00328
Schwartz, L. H.	WP-00339
Shane, R. M.	WP-00229
Shapiro, J.	WP-00199
Shapiro, M. A.	WP-00151
Shobe, W. R.	WP-00221
Shumway, D. L.	WP-00135
Siddiqi, R.	WP-00047

AUTHOR	GRANT NO.
Sieburth, J. McN.	WP-00023
	WP-00100
Skrinde, R. T.	WP-00215
	WP-00346
	WP-00433
Slanetz, L. W.	WP-00009
Smith, A. L.	WP-00139
Smith, L. L. Jr.	WP-00223
Sollo, F. W.	WP-00093
Speece, R. E.	WP-00394
	WP-00483
Spicher, R. G.	WP-00346
Spiegal, Z.	WP-00111
Staffeldt, E. E.	WP-00143
Starkey, R. L.	WP-00006
Stave, P. W.	WP-00443
Stephenson, M. E.	WP-00396
Stevenson, P. C.	WP-00188
Stewart, N. E.	WP-00135
Stoermer, E. F.	WP-00221
Stoevener, H. H.	WP-00107
Stokes, J. L.	WP-00239
Strandberg, C. H.	WP-00181
Stripling, H. L.	WP-00767
Stumm, W.	WP-00013
	WP-00043
	WP-00098
Suess, M. J.	WP-00018
Sulzer, F.	WP-00131
Sundararaj, B. I.	WP-00082
Suttkus, R. D.	WP-00082
Suwannakarn, V.	WP-00222
Tang, Y. P.	WP-00165
Tenney, M. W.	WP-00098
Testerman, M. K.	WP-00044
Thomas, H. A. Jr.	WP-00111
Thomas, J. F.	WP-00230
Tischer, R. G.	WP-00193
Tomlinson, H. D.	WP-00433
Tucker, R. J.	WP-00206
Villemonte, J. R.	WP-00183
Volker, R. P.	WP-00221
Wahl, E. D.	WP-00237
Wales, J. H.	WP-00157
Walker, W. R.	WP-00352
Walters, J. V.	WP-00139
Wang, F. C.	WP-00246
Wang, W. L. L.	WP-00119
Ward, C. M.	WP-00067
Warinner, J. E.	WP-00092
Warren, C. E.	WP-00135
	WP-00157
Warsan, S.	WP-00019
Washington, D. R.	WP-00228
Webb, M. R.	WP-00039
Weber, W. J.	WP-00043
Weiss, C. M.	WP-00010
	WP-00563
Westgarth, W.	WP-00131
Whitworth, W. R.	WP-00067
Williams, H. E.	WP-00328
Wilson, H. A.	WP-00122
Wiman, R.	WP-00079
Wolfe, R. S.	WP-00016
Wolin, E. A.	WP-00016
Wolin, M. J.	WP-00016
Wood, R. K.	WP-00412
	WP-00643
Woods, C. E.	WP-00083
Yerger, R. W.	WP-00082
Yotsukura, N.	WP-00111
Young, J. C.	WP-00143
Younger, R. R.	WP-00206
Yount, J. L.	WP-00216
Zitomer, F.	WP-00235

INDEX TO RESEARCH SUBJECTS

Keyterms in this index refer to either the project title or publications listed under the designated grant. If specific or narrow subjects are desired, two or more keyterms may be combined to eliminate the non-specific references. For example, Industrial wastes gives thirteen references, while Petrochemical Industrial wastes gives only two.

KEYTERM	GRANT NO.
Absorption	WP-00008
Actinomycetes	WP-00005
	WP-00378
Activated sludge	WP-00075
	WP-00131
	WP-00133
	WP-00219
	WP-00228
	WP-00247
	WP-00325
Aeration	WP-00071
	WP-00131
	WP-00142
	WP-00228
	WP-00328
Algae	WP-00002
	WP-00005
	WP-00023
	WP-00026
	WP-00100
	WP-00153
	WP-00164
	WP-00193
	WP-00219
	WP-00221
	WP-00334
Algicides - see Pesticides	
Amino acids	WP-00077
	WP-00083
	WP-00247
	WP-00650
Ammonia - see Nitrogen compounds	
Anaerobic	WP-00026
	WP-00032
	WP-00083
	WP-00204
	WP-00230
	WP-00482
	WP-00483
Antibacterial	WP-00002
	WP-00023
	WP-00100
Assay	WP-00003
	WP-00010
	WP-00067
Bacteria, enteric (also see Coliform bacteria)	WP-00009
	WP-00080
	WP-00119
Bacterial growth & metabolism - see Microorganisms - growth & metabolism	
Bacteria, pathogenic	WP-00009
	WP-00119
Bacteriophage	WP-00119
	WP-00516
Beaches - see Seashore	
Behavior	WP-00135
Benthos	WP-00023
	WP-00047
	WP-00158
Bioassay - see Assay	
Biodegradation - see Decomposition	
Biota	WP-00023
	WP-00092
	WP-00160
B.O.D.	WP-00008
	WP-00012
	WP-00075
	WP-00136
	WP-00143
	WP-00187
	WP-00219
	WP-00316
	WP-00325
	WP-00378
	WP-00389
Bulking	WP-00133

KEYTERM	GRANT NO.
Carbohydrates	WP-00136
	WP-00147
	WP-00157
Carbon	WP-00093
	WP-00327
Carbon dioxide - see Gases	
C.O.D.	WP-00325
	WP-00378
Chlorination	WP-00208
Chromatography	WP-00215
	WP-00230
	WP-00433
	WP-00548
	WP-00563
Coagulation	WP-00024
	WP-00098
	WP-00139
	WP-00240
Coastal waters	WP-00057
Coliform bacteria	WP-00009
	WP-00075
	WP-00100
	WP-00202
	WP-00325
	WP-00650
Colloids	WP-00139
Color	WP-00085
	WP-00139
	WP-00558
Colorimetry	WP-00075
	WP-00235
	WP-00325
Computer	WP-00019
	WP-00111
	WP-00247
Conferences	WP-00096
Contamination	WP-00010
	WP-00019
	WP-00071
	WP-00078
	WP-00080
	WP-00096
	WP-00107
	WP-00142
	WP-00153
	WP-00158
	WP-00181
	WP-00204
	WP-00206
	WP-00305
	WP-00379
	WP-00548
	WP-00575
	WP-00767
Corrosion	WP-00043
Crustacea - see Invertebrates	
Currents (water)	WP-00057
	WP-00226
	WP-00311
Cyanides	WP-00151
Dams	WP-00153
Decomposition	WP-00188
	WP-00193
Design	WP-00032
	WP-00111
	WP-00196
	WP-00213
	WP-00222
Diatomite	WP-00196
Diffusion	WP-00071
	WP-00229
	WP-00328
Disease	WP-00026
	WP-00080
Disinfection (also see Chlorination)	WP-00208
Dispersion	WP-00071
	WP-00181
	WP-00220
	WP-00240
	WP-00347
	WP-00575
Disposal	WP-00070
	WP-00156
Dissolved oxygen - see Oxygen	
Drainage basin - see Watershed	
E. coli - see Coliform bacteria	
Ecology & Limnology	WP-00013
	WP-00023
	WP-00047
	WP-00082
	WP-00157
	WP-00158
	WP-00204
	WP-00209
	WP-00216
	WP-00221
	WP-00334
	WP-00422
	WP-00767
Economics	WP-00019
	WP-00107
Electrolysis	WP-00143
Electrophoresis	WP-00139
	WP-00240
	WP-00516
Enzymes	WP-00230
	WP-00443

KEYTERM	GRANT NO.
Equipment	WP-00044
	WP-00131
Estuaries	WP-00023
	WP-00071
	WP-00142
	WP-00153
	WP-00158
	WP-00176
	WP-00204
	WP-00328
Evaporation	WP-00160
	WP-00226
Fermentation	WP-00230
	WP-00394
	WP-00482
	WP-00483
Filtration	WP-00196
	WP-00213
	WP-00234
	WP-00382
Fish	WP-00010
	WP-00067
	WP-00082
	WP-00135
	WP-00157
	WP-00209
	WP-00223
Flocculation - see Coagulation	
Flora	WP-00157
	WP-00767
Flotation	WP-00164
Flow (air or water)	WP-00111
	WP-00142
	WP-00165
	WP-00220
	WP-00246
	WP-00347
	WP-00[illegible]
	WP-00[illegible]
	WP-00[illegible]
Foam	WP-00[illegible]
	WP-00164
	WP-00396
	WP-00412
	WP-00643
Food processing	WP-00237
Forestry	WP-00051
	WP-00477
	WP-00767
Fractionation	WP-00161
	WP-00396
	WP-00412
	WP-00643
Froth - see Foam	
Gases	WP-00005
	WP-00008
	WP-00016
	WP-00026
	WP-00135
	WP-00165
	WP-00219
	WP-00230
	WP-00394
	WP-00482
	WP-00483
Gas transfer - see Transfer	
Ground water	WP-00017
	WP-00018
	WP-00575
	WP-00676
Halogens & Halogenated compounds	WP-00188
Harvesting	WP-00164
Herbicides - see Pesticides	
Humus	WP-00051
Hydraulics	WP-00156
	WP-00183
	WP-00246
Hydrogen ion	WP-00043
Hydrology	WP-00051
	WP-00111
	WP-00187
	WP-00457
Impoundments - see Reservoirs	
Industrial waste	WP-00032
	WP-00067
	WP-00079
	WP-00085
	WP-00092
	WP-00151
	WP-00181
	WP-00204
	WP-00223
	WP-00237
	WP-00412
	WP-00643
	WP-00651
Insecticides - see Pesticides	
Insects - see Invertebrates	
Invertebrates	WP-00003
(cont. next page)	WP-00023
	WP-00047
	WP-00157

KEYTERM	GRANT NO.
Invertebrates (cont.)	WP-00158
	WP-00209
	WP-00508
Iron - see Metals	
Irrigation	WP-00119
	WP-00352
Isotopes	WP-00164
	WP-00422
	WP-00636
Lakes	WP-00029
	WP-00216
	WP-00221
	WP-00226
	WP-00311
	WP-00422
	WP-00636
Limnology - see Ecology & Limnology	
Littoral drift	WP-00057
Loading	WP-00075
	WP-00133
	WP-00228
Low-flow augmentation	WP-00153
Management	WP-00019
	WP-00027
	WP-00111
Manganese - see Metals	
Mass transfer - see Transfer	
Mathematics	WP-00111
	WP-00161
	WP-00228
	WP-00325
	WP-00457
Membrane filter	WP-00202
Metals	WP-00013
	WP-00017
	WP-00098
	WP-00199
	WP-00297
Methane - see Gases	
Microorganisms - growth & metabolism	WP-00005
	WP-00006
	WP-00016
	WP-00026
	WP-00075
	WP-00078
	WP-00147
	WP-00151
	WP-00193
	WP-00212
	WP-00223
Microorganisms - growth & metabolism (cont.)	WP-00228
	WP-00231
	WP-00239
	WP-00325
	WP-00327
	WP-00443
	WP-00483
	WP-00548
	WP-00643
	WP-00650
Mine drainage	WP-00122
	WP-00147
	WP-00379
Models	WP-00024
	WP-00111
	WP-00213
	WP-00219
	WP-00228
	WP-00234
Nematodes - see Invertebrates	
Nitrogen compounds	WP-00235
	WP-00339
	WP-00422
Nitrogen (gas)-see Gases	
Non-Newtonian	WP-00229
	WP-00286
Nutrition	WP-00026
	WP-00212
	WP-00216
	WP-00297
	WP-00483
Ocean	WP-00158
Odors - see Taste & Odor	
Oil refinery	WP-00067
	WP-00412
Operations research - see Systems analysis	
Organic acids	WP-00199
	WP-00206
	WP-00230
	WP-00482
Outfalls	WP-00158
Oxidation	WP-00136
	WP-00346
	WP-00433
Oxidation ponds	WP-00020
	WP-00026
	WP-00032
	WP-00222
	WP-00231
	WP-00237

KEYTERM	GRANT NO.
Oxygen	WP-00131
	WP-00135
	WP-00176
	WP-00187
	WP-00316
	WP-00566
Oxygenation	WP-00013
	WP-00153
Oxygen balance	WP-00153
Packing plant	WP-00032
Pesticides	WP-00003
	WP-00010
	WP-00206
	WP-00215
	WP-00297
	WP-00433
	WP-00477
	WP-00636
	WP-00676
Petrochemical	WP-00412
	WP-00643
Phenols	WP-00188
	WP-00365
Phosphorus (compounds)	WP-00013
Photosynthesis	WP-00020
	WP-00026
	WP-00153
	WP-00176
	WP-00231
Physiology	WP-00135
Pigments	WP-00020
Plankton	WP-00023
	WP-00026
	WP-00100
	WP-00176
Playa lakes (sinks) - see Lakes	
Polymers	WP-00240
Ponds - see Lakes	
Porosity	WP-00220
	WP-00246
	WP-00347
Potato - see Food processing	
Pulp & Paper	WP-00079
	WP-00085
	WP-00223
	WP-00651
Reaeration - see Aeration	
Recharge	WP-00070
	WP-00347
Reclamation	WP-00026
	WP-00027
Refuse	WP-00019
Reservoirs	WP-00153
	WP-00334
	WP-00428
Resistance	WP-00067
Re-use (of water) - see Reclamation	
Rivers & Streams	WP-00071
	WP-00080
	WP-00142
	WP-00153
	WP-00187
	WP-00221
	WP-00328
	WP-00651
Salt water - see Sea water	
Sampling	WP-00100
Seashore	WP-00057
Sea water	WP-00077
	WP-00100
	WP-00220
	WP-00339
	WP-00650
Sedimentation basins - see Settling basins	
Settling basins	WP-00039
	WP-00183
Sewage	WP-00026
	WP-00070
	WP-00119
	WP-00122
	WP-00153
	WP-00156
	WP-00215
	WP-00237
	WP-00316
	WP-00328
	WP-00334
	WP-00346
	WP-00347
	WP-00365
	WP-00389
	WP-00396
	WP-00566
	WP-00643
Shellfish	WP-00009
Silica	WP-00240
Sludge	WP-00083
	WP-00229
Soils	WP-00018
Solar energy	WP-00026
Spectrophotometry	WP-00235
Sphaerotilus - see Microorganisms - growth & metabolism	

KEYTERM	GRANT NO.
Stabilization ponds - see Oxidation ponds	
Statistics - see Mathematics	
Storage	WP-00111
Stratification	WP-00428
Structure	WP-00221
Sulfur (compounds)	WP-00006
	WP-00340
	WP-00482
Surface active agents	WP-00018
	WP-00131
	WP-00327
	WP-00346
Surface water	WP-00047
Survey	WP-00305
Synthetic detergents - see Surface active agents	
Systems analysis	WP-00019
	WP-00111
	WP-00247
Taste & Odor	WP-00005
	WP-00334
	WP-00378
Temperature	WP-00222
	WP-00316
	WP-00394
Thermal	WP-00092
	WP-00181
Tidal	WP-00176
Total oxygen demand - see B.O.D.	
Toxicity	WP-00002
	WP-00003
	WP-00067
	WP-00079
	WP-00209
	WP-00223
	WP-00297
Tracers	WP-00057
Transfer	WP-00008
	WP-00131
	WP-00161
	WP-00164
	WP-00229
	WP-00286
	WP-00323
Vibration	WP-00161
Viruses, enteric	WP-00009
	WP-00119
Volatile acids - see Organic acids	
Waste lagoons - see Oxidation ponds	
Waste ponds - see Oxidation ponds	
Waste treatment	WP-00019
	WP-00026
	WP-00083
	WP-00085
	WP-00098
	WP-00131
	WP-00139
	WP-00143
	WP-00151
	WP-00193
	WP-00208
	WP-00213
	WP-00219
	WP-00222
	WP-00230
	WP-00231
	WP-00234
	WP-00237
	WP-00325
	WP-00346
	WP-00424
	WP-00482
	WP-00483
	WP-00508
	WP-00643
Waste water - see Sewage or Industrial waste	
Water pollution - see Contamination	
Water quality	WP-00013
	WP-00019
	WP-00044
	WP-00107
	WP-00111
	WP-00206
	WP-00226
Watershed	WP-00153
Water supply	WP-00111
	WP-00305
	WP-00346
	WP-00352
	WP-00365
	WP-00558
	WP-00563
	WP-00566
	WP-00676
Water treatment	WP-00098
	WP-00196
	WP-00516
Water use	WP-00107
	WP-00352
Wells	WP-00070
Zeta potential	WP-00382

U. S. GOVERNMENT PRINTING OFFICE : 1966 O - 217-110